NEWS:

SECURITY SNAFU
A lost tape spurs ABN Amro's mortgage unit to publicize a plan to send customer data over a secure network. **PAGE 6**

BACK FROM THE BRINK
HP extends support for its e3000 midrange system to avoid leaving holdout users in the lurch. **PAGE 8**

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Forecast 2006

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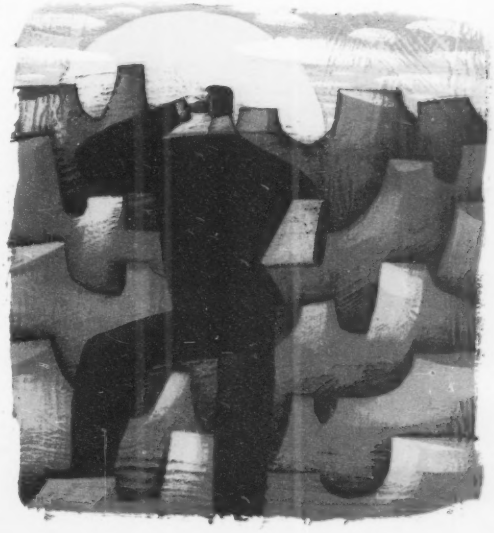
Expect project management to be your growing vexation, security lockdowns your No.1 task and RFID your biggest disappointment.

PLUS, BOLD PREDICTIONS FROM THE INDUSTRY'S TOP LUMINARIES.
PREDICTIONS BEGIN ON PAGE 17.



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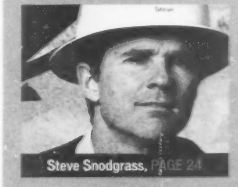
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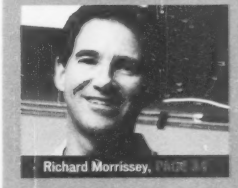
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Which predictions make sense, and which ones seem absurd?

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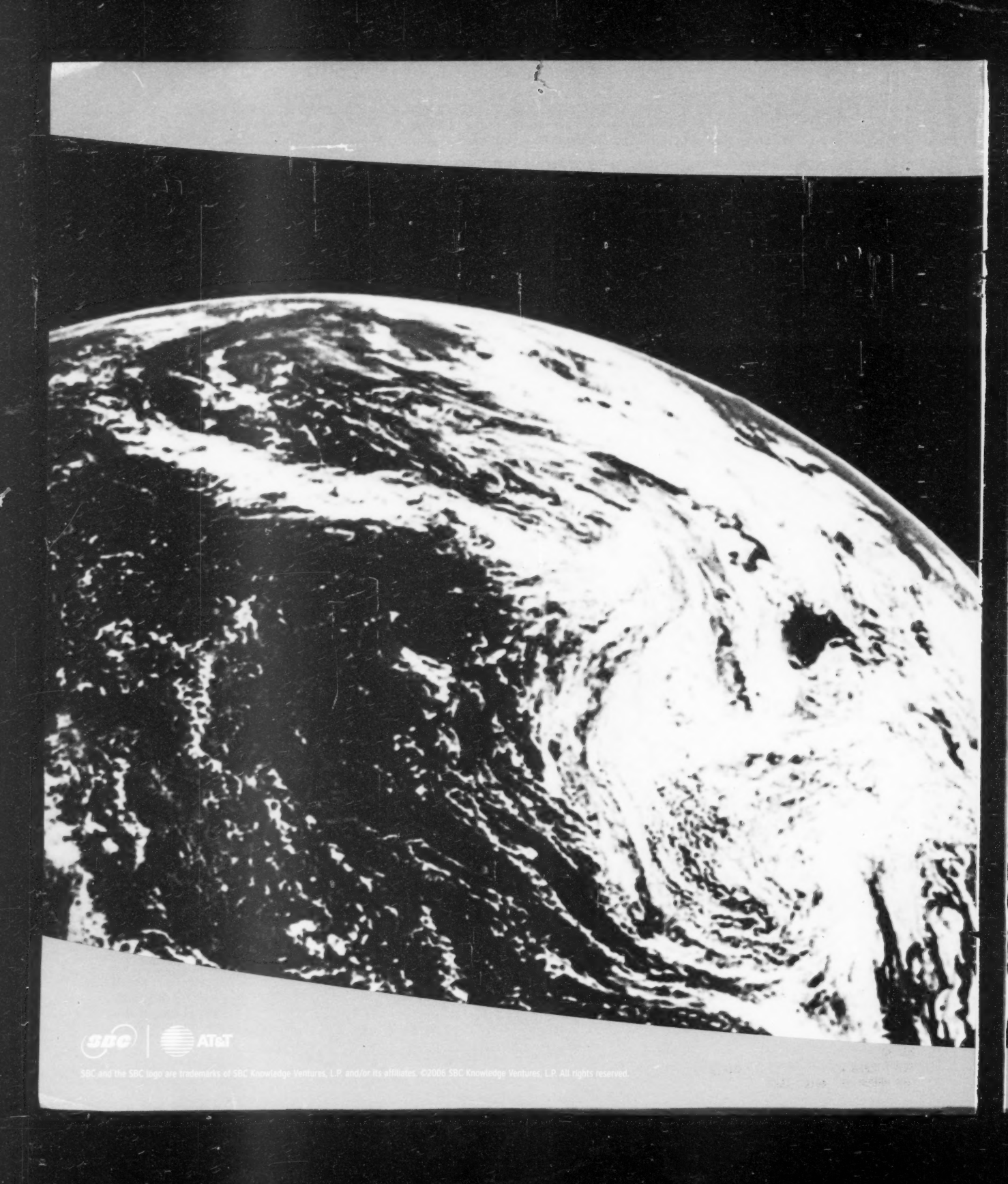

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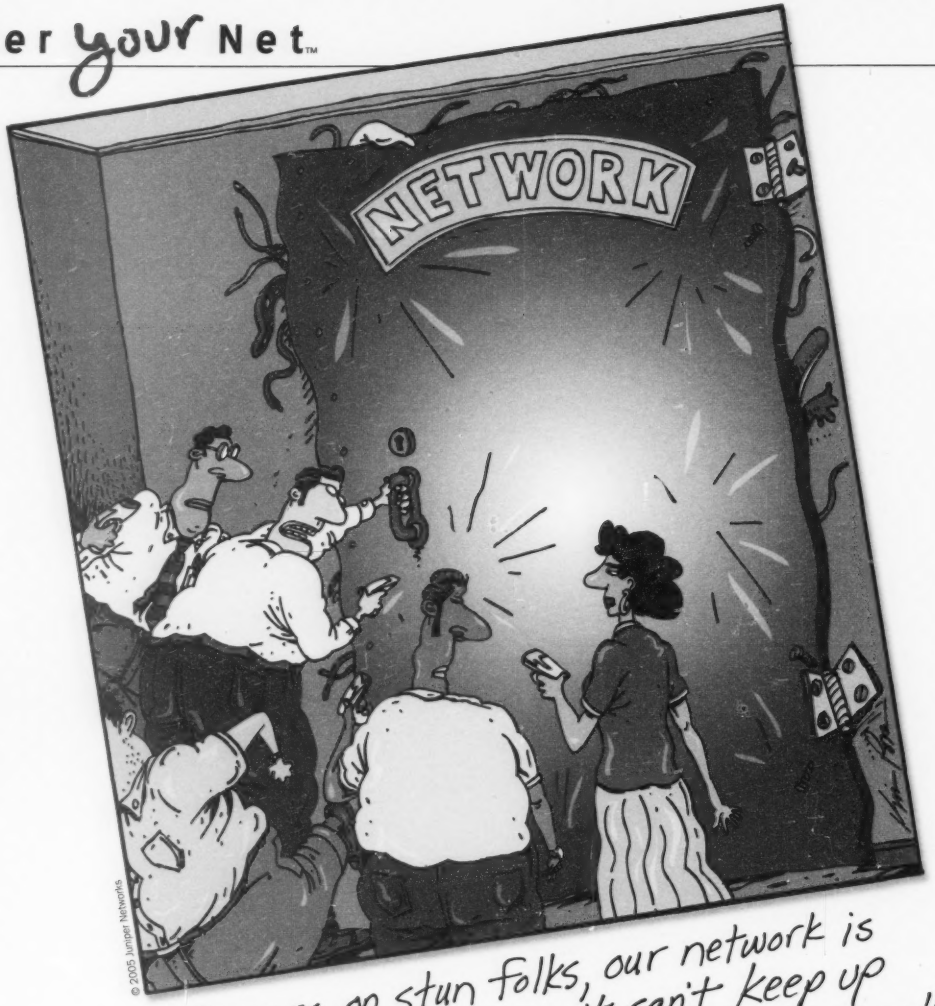

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6 Some Oracle users say they have misgivings about the vendor's new mulitcore pricing model.

8 Hewlett-Packard now says that it will continue to support the HP e3000 midrange system until December 2008 or later.

12 Global Dispatches: The European Commission again warns Microsoft to comply with its March 2004 antitrust ruling or face daily fines; and telecommunications services provider Tele2 sells off its fixed-line telephony operations in the U.K. and Ireland.

12 Q&A: Eclipse Foundation executive director Mike Milinkovich claims that the open-source group has finally laid to rest questions about its independence from IBM and that its tools for building Java-based client apps are gaining support.

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Forecast 2006

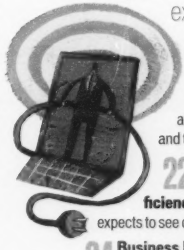
Predictions, advice and encouragement to help you warm up to the new year.

15 Editor's Note: Don Tennant refuses to make any predictions for 2006, since the IT industry is way too unpredictable. But he does know what *won't* happen this year.

16 Project Management. From global teams to portfolio management, here are your five biggest project challenges in the new year along with tips for overcoming them.

Priority Plans

These three technology projects will top many 2006 to-do lists. Here's what you can expect to see in the coming year.



20 Security: Expect threats to get nastier as networks become more complex. Plus, reporter Jaikumar Vijayan offers his own predictions for 2006, including the anticipated onslaught of Trojans horses, rootkits and targeted attacks.

22 Wireless: The technology will again help users make small gains in business efficiency. Plus, *Computerworld*'s Matt Hamblen says he expects to see consolidation among networking vendors this year.

24 Business Intelligence: The number of BI vendors will drop, but software choices will multiply. And *Computerworld*'s Heather Havenstein says Microsoft will be the BI story of the year.

27 Top 10 Predictions. Nancy Weil of the IDG News Service offers her picks for this year's top IT stories.

28 Skills Scope. Developers, security experts and project managers will be in strong demand this year.

Sound-off

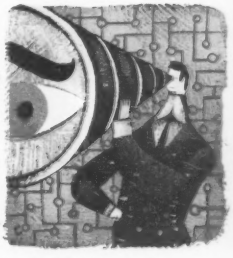
Two of our columnists lock horns on the future of PCs.

30 Dead in the Water. Frank Hayes says you'll have all-out war on your hands if you try to replace PCs with thin clients.

30 Wave of the Future. Mark Hall says it's time to end IT's time-sucking support of full-scale computers on desktops.

Hope & Hesitation

A gift for some, a disappointment for others – these three technologies are still viewed with a skeptical eye by IT.



34 RFID. Cost and complexity are still curtailing enterprise use of radio frequency identification technology, even though some big organizations like Wal-Mart and the Pentagon are requiring their suppliers to use it.

36 Wireless. Manageability problems continue to stymie widespread adoption of wireless technology.

37 VoIP. Problems with quality are a thing of the past, but voice-over-IP systems still aren't delivering the savings users expected.

42 Opinion: Frank Hayes wants you to be ready for the coming year, so he offers a to-do list for dealing with users, management, gadgets, security and the business of IT. Plus, Sharky drowns in silly help desk calls.

COVER ART CREDITS: ILLUSTRATION BY CHRISTOPHER NIELSEN. PHOTOGRAPHY, TOP TO BOTTOM: JAMES CALLOWAY, GARY LAUFMAN, WEBB CHAPPELL

ONLINE

The following stories can be found online at www.computerworld.com/forecast

Predictions

Industry observers share their most provocative thoughts about IT in 2006. Visit our Web site to learn what Don Tapscott, Thornton A. May, Paul Glen and many others have to say, and vote for the best and worst. Plus, predictions from around the Web, from wearable computers to the decline of outsourcing.

Reporters' Notebooks

Get insights on key industry trends from *Computerworld* beat reporters who cover storage, enterprise systems and more.

Opinion

Poring through past issues of *Computerworld* gives editor Jamie Eckle a serious sense of déjà vu.

Data Points

These downloadable PowerPoint slides offer statistics on IT projects, spending and staffing priorities for 2006.

PCs in 2007

Last year was quiet for PC advancements, and 2006 looks much the same. Two IDG News Service reporters turn hopefully to the PC of 2007.

ABN Amro Unit Reveals Electronic Data-Transfer Plan After Tape Snafu

Information on 2 million mortgage customers lost in transit for a month

BY LUCAS MEARIAN

ABN AMRO Mortgage Group Inc. said it plans to stop sending data tapes to its credit-reporting bureaus after a tape containing personal information on more than 2 million customers was temporarily lost late last year.

Group CEO Thomas Goldstein announced that the company has been working since last spring on a plan to encrypt data and send it over secure networks whenever possible. The project is slated to be completed this month.

The plans were disclosed on Dec. 19, the same day the company located the missing tape.

ABN Amro told customers that the tape was lost on Nov. 18 while being transported by the DHL Worldwide Express delivery service. It was on its way from a data center run by a subsidiary of LaSalle Bank Corp. in Chicago to an Experian Information Solutions Inc. credit bureau facility in Allen, Texas. The tape contained the names, account information, payment histories and Social Security numbers of residential mortgage customers, according to a letter ABN Amro sent to customers.

Goldstein said there was no evidence that the data was misused, but he acknowledged that there is no way to prove that the tape wasn't read or copied while missing. Goldstein said the package containing the missing tape was found at a DHL facility in Ohio in its original sealed container, without the air bill, and that DHL then readdressed the package back to ABN Amro.

Service Woes

The problems for ABN Amro didn't end there. An offer to affected customers for a free credit-monitoring service overwhelmed a Web site run by credit-reporting agency Trans Union LLC.

The free service was first offered for 90 days and then quickly extended to a year after customers complained that 90 days wasn't long enough.

Goldstein said ABN Amro has completed about 70% of its rollout of a secure data network for moving data to its credit-reporting bureaus.

"The goal starting last spring was to eliminate all physical handling of tapes," Goldstein said. But in cases where the recipient can't handle electronic data, tapes will be sent via special courier, he added.

"One of the really upsetting things about this is one more month, and this couldn't have happened," Goldstein said.

An IT manager whose personal mortgage information happened to be lost said he's frustrated because no matter how careful he is about identity theft, he's "at the mercy of other entities out there." The manager said his company, which he asked not to be identified, replicates data across private T1 lines to a disaster recovery site. The data is encrypted as it's sent. His company uses its own couriers to send tapes offsite for better control, he said.

Arun Taneja, founder of research firm Taneja Group Inc. in Hopkinton, Mass., said ABN Amro's move to boost its data security measures puts it in the forefront of large businesses. Taneja estimated that only about 2% of all enterprises have taken measures such as encrypting data stored on tapes or setting up secure networks to transfer data backups.

"We're basically naked as an industry when it comes to data that's encrypted or made not identifiable somehow," he said. "We're just babes in the woods."

Taneja said that over the next five years, digital tape will be used only for "deep" archive purposes, while disk-to-disk backup will be the primary means of archiving data for months or even a few years.

TIMELINE

ABN Amro's Lost Tape

NOV. 18	A tape with 2.1 million customer names is lost.
DEC. 16	ABN Amro tells affected customers of lost tape and offers 90 days of free credit monitoring.
DEC. 19	Tape is found at DHL facility in Ohio by a DHL employee, who sends it back to ABN Amro.
DEC. 20	ABN Amro alerts customers that tape was found and extends credit monitoring offer to a year.
JAN. '06	ABN Amro expects to complete development of a secure electronic network for transmitting data to credit bureaus.

Users Unmoved by Oracle Pricing Changes

Multicore model dictates hardware choice, some say

BY MARC L. SONGINI

Users interviewed after Oracle Corp. revamped its multicore-processor pricing model last month seemed largely unimpressed with the move.

In a conference call in December, Jacqueline Woods, Oracle's vice president of global pricing and licensing strategy, said the new model calls for separate pricing schemes for the chips of different vendors.

Oracle's previous multicore model, announced last July for all hardware systems, counted each processor core as equal to 0.75 of a single-processor license. Oracle charges $40,000 for a single-processor license for an enterprise version of its database software.

Woods said the new scheme will "bring greater parity" to pricing and claimed that it represents Oracle's hardware-agnostic strategy. The new model applies to Oracle's database, middleware and some of its business applications, she said.

The new scheme assigns Sun Microsystems Inc.'s new multicore T1 processor, also known as Niagara, a 0.25 multiplier, meaning an eight-core processor requires only two full licenses.

Pricing for software running on servers based on Intel Corp. or Advanced Micro Devices Inc. chips will be determined by multiplying the number of processor cores in a server by 0.5, Oracle said. All other multicore chips, such as Sun's UltraSparc IV+ or IBM's Power, will retain the 0.75 multiplier.

John Matelski, deputy CIO for the city of Orlando, predicted that the new, more complex multicore scheme would be confusing, though he didn't expect it to immediately affect his shop.

The city runs PeopleSoft EnterpriseOne software on IBM's iSeries server.

Hal Kuff, a technology manager at Tessco Technologies Inc., said he has some misgivings because, despite Oracle's claims, the new model appears to dictate to users what hardware to use. Nevertheless, he plans to ask Oracle for permission to test its 10g database on Linux-based multicore systems for potential deployment. The distributor of wireless products in Hunt Valley, Md., now runs both Oracle's 9i and 10g databases on Hewlett-Packard Co.'s ProLiant and AlphaServer systems.

John Schindler, CIO at Cleveland-based Kichler Lighting, a PeopleSoft Enterprise ERP user, said he hopes that Oracle's move marks the start of more software price discounting and flexibility.

To date, software vendors have not been widely adjusting prices as the cost of hardware has continued to drop, he said.

"What I'm seeing is an ever-increasing gap between hardware and [Oracle's] software pricing," Schindler said. Software licensing under models from Oracle and other vendors for multicore boxes can exceed the cost of the server by up to four times, he added.

Mike Schiff, an analyst at Reston, Va.-based consultancy MAS Strategies, said that the new pricing model does offer customers more options, but he also suggested that it could steer them toward specific hardware systems.

"I suspect that Oracle will be adjusting these factors over time and that given Oracle's position as the relational database king, multicore processor vendors will lobby to have the factor for their chips as low as possible," he said.

Tom Krazit of the IDG News Service contributed to this story.

Multicore Price Changes

Enterprise Oracle DBMS pricing on selected systems:

- An eight-core Sun UltraSparc T1000 server is now $80,000, compared with $240,000 under the previous pricing model.
- A four-core Intel- or AMD-based system is now $80,000, compared with $120,000 under the previous pricing model.

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BRIEFS

CIO Who Bucked Microsoft to Resign

Peter Quinn, who has been trying to move Massachusetts state agencies toward the OpenDocument file format, will resign as the state's CIO effective Jan. 9, according to a memo obtained by the IDG News Service. Quinn sent the memo to staffers in the state's IT division on Dec. 24. He wrote that his championing of OpenDocument over Microsoft Corp.'s Office file formats has made him "a lightning rod with regard to any IT initiative." Quinn also said the events surrounding the proposed switch "have been very disruptive and harmful to my personal well-being, my family and many of my closest friends."

EC OKs Oracle's Purchase of Siebel

The European Commission has cleared Oracle Corp.'s proposed $5.85 billion purchase of Siebel Systems Inc. The commission said it concluded that the acquisition would not "significantly impede effective competition." The deal was approved by U.S. regulators in November, and Oracle said it expects to complete the acquisition by the end of March.

IBM Agrees to Buy Network Tools Vendor

IBM has agreed to buy Micromuse Inc., a network management software vendor in San Francisco, for $865 million in cash. IBM said it plans to add Micromuse's offerings, which can be used to manage services such as video-conferencing for remote workers, to its Tivoli product line.

Short Takes

MARRIOTT INTERNATIONAL INC.'s vacation club unit said Dec. 27 that backup tapes containing data on 206,000 staffers and customers have been missing from its central offices in Orlando since at least mid-November. . . . UNILEVER NV announced a seven-year deal to outsource its financial services operations and systems in more than 20 European countries to IBM. The value wasn't disclosed.

HP Gives Reprieve on Support to e3000 Users

Says it will offer 'reactive' services through 2008

BY PATRICK THIBODEAU

In a major product road map turnaround, Hewlett-Packard Co. last month pushed back the end-of-support date for its discontinued HP e3000 midrange system from the end of this year to December 2008 or later.

HP said it decided to extend the support cutoff deadline after recognizing that some companies may need to continue running their e3000s beyond this year because of "business constraints, transition timelines or [the need] to retain access to data for archive or regulatory reasons."

Although HP still strongly recommends that users migrate off of the e3000, the company said it will continue to offer basic "reactive" maintenance services, such as the development of patches for the venerable minicomputer line's MPE operating system. In addition, users with more mission-critical needs can get custom support from HP.

OpenMPE Inc., a Hagerstown, Md.-based organization set up by a group of e3000 users, consultants and resellers, had been seeking access to the MPE source code so it could be maintained and updated after HP stopped supporting the system. HP had planned to decide the source code's fate by the end of 2005. But the company said it now will wait until 2008 to license the code to one or more third parties, if there's still interest then.

Donna Garverick, an e3000 user and secretary of OpenMPE, said it's important to get access to the source code as soon as possible, despite HP's decision to extend its support for the e3000.

"I don't want to see MPE die," said Garverick, who asked that her employer not be identified. Getting access to the source code would enable software engineers outside of HP to be trained on the inner workings of MPE before support ends, she said.

Some e3000 users have voiced concerns that HP is losing its ability to support the system because of a lack of in-house know-how. But Jim Murphy, director of NonStop and business-critical systems services at HP, said after the support extension was announced that he feels "very confident that we are in good shape with our e3000 expertise around the world."

HP stopped selling the e3000 in 2003. The vendor wouldn't disclose the number of remaining users, but an OpenMPE official previously estimated that about 2,000 customers are still using e3000 systems.

Jean Bozman, an analyst at Framingham, Mass.-based IDC, said the e3000 is used by many businesses running custom-built, mission-critical applications, so it's difficult for them to switch to other hardware.

"HP is being absolutely clear that [users] have to get off the system," Bozman said. "But at the same time, [it is] acknowledging that some people are having difficulty doing this."

HP has set up migration programs to help users move from the e3000 to its other servers. But some IT managers had made plans to continue running the e3000 past the initial end-of-support date. ▸

HP's New e3000 Support Plan

- Basic support services have been extended from the end of this year through 2008, at least.
- The MPE operating system's source code will be licensed to third parties once support ends.
- HP will continue to recognize existing e3000 professional certifications.
- The vendor has licensed its MPE training materials to two e3000 consulting firms.

Faulty ERP App Results in Shortfall for Medical Firm

Oracle rollout costs Invacare millions

BY MARC L. SONGINI

Problems with rolling out a set of Oracle Corp. ERP application modules have caused Invacare Corp. to take a hard financial hit; the company expects to report a fourth-quarter revenue shortfall of about $30 million.

The Elyria, Ohio-based maker of home medical products blamed start-up problems with order-to-cash application modules for the financial woes in the quarter that ended Dec. 31. The modules let a company receive an order, allocate supplies to build it and provide customer access to order status.

Invacare has successfully implemented other Oracle applications since the $20 million ERP effort started four years ago, officials said.

In a statement, Invacare blamed the financial problems on an "extensive but temporary" disruption of order-to-cash processes and "inefficiencies" during the recent implementation of the modules. As a result, Invacare cut its fourth-quarter revenue estimate to between $370 million and $380 million and its estimated earnings per share from between 55 cents and 70 cents to 30 cents to 40 cents.

The ERP project set out to replace a number of homegrown systems with Oracle's software, according to an Invacare spokesman.

Last fall, Invacare went live with the order-to-cash system and soon faced several problems, the spokesman said. For example, call center personnel were unable to respond quickly to customer queries or to share with them information about their order status. The software also caused the company to miss shipment deadlines, he said.

"We never expected it to be perfect, but we didn't expect the magnitude of issues we experienced," said the spokesman, who declined to say what caused the problems.

"We're still working with the challenges," he said. "We haven't pulled together all the lessons learned yet, but we should have done more testing than we did."

The software problems forced Invacare to spend money on overtime for workers in manufacturing, distribution and customer service operations. The company was also required to spend extra money to expedite customer orders and had to process a higher-than-normal level of returns.

Invacare expects the problems to be resolved soon.

An Oracle representative said via e-mail that the company "is actively working with Invacare to help address issues with its ERP system, and the company is already experiencing system improvements."

Oracle's order-to-cash software generally works very well, and it's somewhat surprising that Invacare has had problems implementing it, said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif. He speculated that the problems may be related to a lack of sufficient training or testing. ▸

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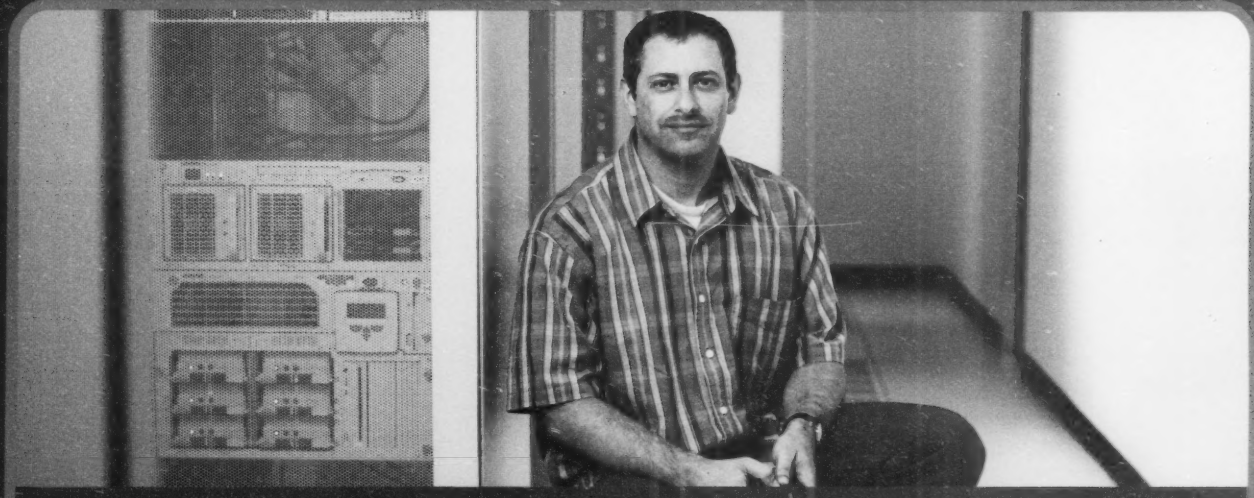

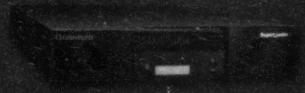

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GLOBAL DISPATCHES An International IT News Digest

EC Warns Microsoft on Antitrust Obligations

BRUSSELS

THE EUROPEAN Commission last month issued Microsoft Corp. a new warning to comply with the commission's March 2004 antitrust ruling or face daily fines of up to €2 million ($2.4 million U.S.).

On Dec. 22, the commission sent Microsoft a "statement of objections" saying the company had failed to disclose interface documentation that's needed to enable non-Microsoft workgroup servers to achieve full interoperability with PCs and servers running Windows.

In response, Microsoft General Counsel Brad Smith called the objections "unjustified" and said the company will contest them "to the full extent permitted."

Microsoft submitted revised documentation the week before the warning was issued in an attempt to comply with the commission's demands, Smith said.

The commission said its "preliminary view" is that the revised information is "incomplete and inaccurate." Microsoft has until Jan. 25 to respond to the statement of objections and can request an oral hearing on them — a step that Smith said the company plans to take.

■ SIMON TAYLOR AND JEREMY KIRK, IDG NEWS SERVICE

GLOBAL FACT

$11.5B

Projected IT spending within Western Europe's education sector in 2009, up from $9 billion in 2004.

SOURCE: IDC, FRAMINGHAM, MASS.

Tele2 Exits Fixed-Line In the U.K. and Ireland

DUBLIN

CITING PROBLEMS in accessing established telecommunications networks in the U.K., Stockholm-based Tele2 AB has sold its fixed-line telephony operations in that country and Ireland to The Carphone Warehouse Group PLC for £8.7 million ($15.3 million U.S.).

The access difficulties also drove Tele2 to abandon plans to enter the broadband services market in the U.K., said Hakan Zadler, the network operator's chief financial officer.

Zadler said Tele2 is also leaving the Irish market because it couldn't leverage common marketing efforts without a business presence in the U.K.

Katja Ruud, an analyst at Gartner Inc.'s office in Solna, Sweden, said the U.K.'s Office of Communications isn't acting as fast as it could in ensuring that established networks are opened to new vendors such as Tele2.

But the spokeswoman added that Tele2 was "very late" to the fixed-line market in the U.K.

■ NANCY GOHRING, IDG NEWS SERVICE

AMD, Intel Spar Over Court Ruling in Japan

TOKYO

THE TOKYO District Court ruled last month that evidence collected by Japan's Fair Trade Commission as part of a yearlong investigation into Intel Corp.'s business practices must be publicly disclosed, according to Advanced Micro Devices Inc. However, Intel disputed AMD's contention.

AMD said the ruling was made during a hearing related to lawsuits that its Japanese subsidiary filed against Intel in two courts last June, after Japan's Fair Trade Commission found that Intel had abused its monopoly power in that country's microprocessor market.

But an Intel spokesman said that AMD "misstated and exaggerated what happened in a procedural matter." He added that the court's decision didn't mention any specific pieces of evidence and "certainly doesn't say that the documents will become public." ▸

■ MARTYN WILLIAMS, IDG NEWS SERVICE

Compiled by Mike Bucken.

Briefly Noted

Perot Systems Corp. has announced plans to offer IT infrastructure services at its facilities in Noida and Bangalore, India. Plano, Texas-based Perot also formally opened an office tower in Noida that will house 800 employees. The company said it now has 6,000 workers in India – about 35% of its total workforce.

■ JOHN RIBEIRO, IDG NEWS SERVICE

NEC Corp. plans to ship its first laptop based on Intel's Yonah mobile processor this year. Yonah is the code name for a dual-core version of the Intel Pentium M processor slated for release in the first quarter. NEC said its Yonah-based RX LR9000 laptop will cost ¥225,000 ($1,920 U.S.).

■ MARTYN WILLIAMS, IDG NEWS SERVICE

La Caixa, a Barcelona-based bank, has signed a four-year, €200 million ($236 million U.S.) contract extension with Electronic Data Systems Corp., which has provided the bank with IT and business process outsourcing services since 1996. EDS will develop new banking and insurance software and an applications architecture for La Caixa. It will also integrate the bank's mainframe, midrange and network operations.

■ JEREMY KIRK, IDG NEWS SERVICE

New Members Proving Eclipse Independence From IBM

BY HEATHER HAVENSTEIN

In an interview with Computerworld, **Mike Milinkovich**, *executive director of The Eclipse Foundation, discussed the open-source community's past year and talked about its plan to add IT managers and CIOs to its target audience of developers. Milinkovich also said that questions about the organization's independence from founder IBM have been mostly resolved and that the Eclipse Rich Client Platform for developing Java-based client applications is gaining member support.*

What were the key milestones for Eclipse over the past year? The tipping point for the growth of Eclipse in membership and broad adoption happened in February, [when] BEA, Borland, Sybase, Computer Associates and Wind River joined the foundation. It laid to rest permanently any questions regarding the independence of the foundation. BEA, Computer Associates and Borland compete vigorously against IBM. This fundamentally changes the perception of Eclipse in the industry. The other major thing we accomplished: We clearly got the message out that Eclipse is more than a Java [integrated development environment].

Does Eclipse need to get more visibility to continue its growth? We are [now] building tools and technologies that are spanning the entire application life cycle. That fundamentally changes the equation for the CIO and senior IT manager. You are no longer making a tactical decision. You are making a strategic decision where you are going to focus your software supply chain on an Eclipse infrastructure. Whenever you start stepping into the runtime infrastructure, that is more likely to grab the attention of a CIO.

What is the status of the Business Intelligence and Reporting Tools that allow Java developers to embed reports into applications? BIRT this year clearly exceeded our expectations in terms of adoption rates. [It has] gone from a brand-new project to being one of the most downloaded and most widely adopted new projects at Eclipse. It is solving a problem Java developers have desperately wanted to solve for a long time. Until now, the state of the art in report writing for Java developers was not even as good as what I was using as an application programmer in the '80's. You were hand-coding reports in JSP code, [and] that is not a very productive way to build reports.

What are your plans for 2006? A year from now, I am hoping we can be talking about how well the rich-client platform has done in terms of [independent software vendor] adoption. This technology is a real winner for ISVs and application developers who want to build portable applications across Windows, Macs and Linux that provide a managed client environment for companies and IT departments to manage on the client. Our application life-cycle framework project is focused on providing the ability to integrate tools across the entire life cycle. ▸

Correction

The "Hands On" story in the Dec. 19 issue's Management section misnamed Johnson & Johnson's IT infrastructure and support services organization and incorrectly referred to John Barbano as the unit's former CIO. Barbano, who is now CIO for pharmaceutical research and development at Johnson & Johnson, previously worked as vice president of global infrastructure operations within the Networking & Computing Services unit. The story also should have stated that pharmaceuticals – not pharmaceutical R&D – is Johnson & Johnson's largest business segment.

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Tuesday, January 24, 2006 • 8:30am to Noon
Hyatt Regency Phoenix • Regency Ballroom, Salon D
122 North Second Street • Phoenix, Arizona

8:00am – 8:30am	**Registration and Networking Breakfast**
8:30am – 8:40am	**Introduction and Overview**
8:40am – 9:30am	**Market Outlook and Trends** Presented by IDC
9:30am – 10:00am	**The Agile IT Infrastructure** Frank Enfanto, Vice President, Health Care Services System Delivery, Blue Cross/Blue Shield of Massachusetts
10:00am – 10:15am	**Refreshment and Networking Break**
10:15am – 10:45am	**IT End-User Case Study** Bob Carroll, Chief Information Officer, The Apollo Group (The University of Phoenix)
10:45am – 11:15am	**IT Infrastructure at Maricopa Community College** Earl Monsour, Director, Strategic Information Technologies, Maricopa Community College District
11:15am – Noon	**Panel Discussion: Creating an Agile Enterprise IT Architecture is Easier Said than Done** Moderator: Julia King, National Correspondent and Executive Editor, Events, Computerworld Panelists: Frank Enfanto, Vice President, Health Care Services System Delivery, Blue Cross/Blue Shield of Massachusetts Bob Carroll, Chief Information Officer, The Apollo Group (The University of Phoenix) Earl Monsour, Director, Strategic Information Technologies, Maricopa Community College District Gary Greenwald, Vice President, Application Engineering and Operations, Ameritrade
Noon	**Optional Luncheon**

Selected speakers include:

Frank Enfanto
Vice President, Health Care Services System Delivery Blue Cross/Blue Shield of Massachusetts

Bob Carroll
Chief Information Officer The Apollo Group (The University of Phoenix)

Earl Monsour
Director, Strategic Information Technologies Maricopa Community College District

Gary Greenwald
Vice President, Application Engineering and Operations Ameritrade

Julia King
National Correspondent and Executive Editor, Events Computerworld

COMPUTERWORLD
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CHRISTOPHER NIELSEN

Predictions

BLOGS GALORE
With the explosion of new blogs and blog search engines, the "blogosphere" will become the single richest source of material news leaks in the history of the stock market. This will cause public companies to take emergency action to control insider leaks into the blogosphere, so they can avoid the wrath of the SEC. Similarly, companies both public and private will implement technology and policy controls over valuable intellectual property that can all too easily leak outside the enterprise via these new communication channels.
GARY STEELE, CEO, PROOFPOINT INC., CUPERTINO, CALIF.

CONSOLIDATION MAXED
In 2006, the consolidation of hardware, software and telecom is nearing both practical and legal maxima. Buyers of IT products and services will be either taxed or empowered, depending on the agility of their spending. The size of merged companies will ensure that those who are wedded to their products will pay an increasing premium. Those who guard the "openness" of their infrastructure and move dollars freely among vendors willing to craft real solutions, allowing their products to be freely used with those of other vendors, will see the growth of meaningful returns.
CARL WEDDLE, DIRECTOR OF IT, QUALITY TRAILER PRODUCTS, ST. CLOUD, MINN.

SEARCHING THE ENTERPRISE
Customers of IT will demand Internet-quality search in the enterprise. The key is breaking down content barriers inside companies and migrating away from nonmainstream technologies to technologies that deliver value. Enhanced search capabilities enable companies to find information faster. For instance, we moved our knowledge exchange system from Lotus Notes to Microsoft. This provides seamless, intuitive access to Accenture's knowledge content. Companies need to make sure that they have the content, that people can find it and that it is current. This puts the "I" back in "IT," turning content into usable information.
FRANK MODRUSON, CIO, ACCENTURE LTD., CHICAGO

EDITOR'S NOTE

Not Happenin'

I'VE been in this line of work for about 15 years, and I've learned a great deal. One of the things I learned early on was to leave it to others in *Computerworld*'s physical and virtual newsrooms to predict what will happen in the new year. I'm lousy at it. As far as I'm concerned, this industry is way too unpredictable.

DON TENNANT is editor in chief of *Computerworld*. Contact him at don_tennant@computerworld.com

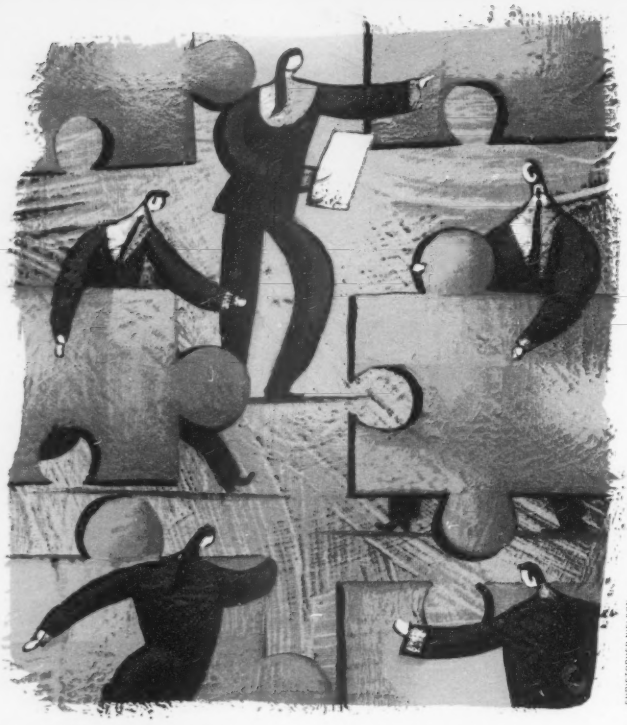
Think about it. One year ago, who would have predicted that within 12 months, Oracle's Larry Ellison would buy Siebel Systems, a company he'd long scoffed at because of its build-by-acquisition strategy? Or that Hewlett-Packard would announce that Netscape, of all things, would ship on its PCs beginning in 2006? You wouldn't have raised any more eyebrows if you had forecast that HP would offer users the option of selecting WordStar as their default word processor.

So there's no way I'm going to try to expound upon what you can expect to see this year. A lot of bright people have very capably provided that insight in this inaugural issue of 2006, so I'm not going there. Instead, I'm taking a much safer road. I'm offering my predictions of what will not occur in the course of the next 12 months. Here we go:

- CA, the company formerly known as Computer Associates, will not abbreviate its new name as a means of disassociating itself from the management team that boneheadedly eliminated the company's 300 customer advocate positions worldwide. But only because it's running out of letters.
- The H-1B visa cap will not be raised to enable more non-U.S. citizens to contribute to the development of this country's technological capabilities. Too many voters are convinced it's unfair to have to compete for jobs with people who work harder than we do.
- Dell will not forgo its cozy arrangement with Intel in order to appease customers who have been clamoring for AMD processors. OK, that was a gimme.
- Sun Microsystems CEO Scott McNealy will not publicly admit that spending $4.1 billion to acquire StorageTek was a mindless waste of his shareholders' money. Then again, McNealy still hasn't even admitted publicly that Solaris is a mindless waste of his users' money.
- IBM will not sell its software business to a Chinese company. Are you kidding? IBM was practically accused of treason for dumping its sick PC business into Chinese hands. Nobody wants to see Steve Mills branded with a scarlet "T."
- Salesforce.com will not do anything whatsoever that's innovative in 2006. CEO Marc Benioff will be way too busy trying to divert public attention from his competitors to spur any innovation at his own company.
- The number of Linux aficionados will not increase in 2006. In fact, their numbers will diminish as Linux loonies worldwide throw themselves off cliffs and in front of trains after seeing Bill Gates on *Time* magazine's Dec. 26 "Persons of the Year" cover.

On that note, let me wrap up by saying we hope you enjoy the intriguing, informative look ahead that Special Projects Editor Ellen Fanning and her team have produced for you in this special Forecast issue. And best wishes from all of us for a healthy, rewarding, happy new year.

Don Tennant



CHRISTOPHER NELSON

FIVE BIGGEST project challenges for 2006. BY MARY BRANDEL

WHAT'S NEXT: Project Management

PROJECT MANAGEMENT ain't what it used to be. From who's on the team and where team members are located to the tasks they're expected to complete, project management is a changing discipline.

Consider that project teams are increasingly dispersed across large areas, sometimes spanning the globe, and that IT staffers are finding themselves in more partnerships with managed service providers and outsourcers. Even the projects themselves are changing, as the most business-urgent and thus riskiest projects increasingly get the most funding.

"These things add extra layers of complexity that, if not managed well, will lead to chaos," says Gopal Kapur, founder and president of the Center for Project Management in San Ramon, Calif.

It's no wonder that 33% of respondents to a recent *Computerworld* survey identified project management as the No. 1 management challenge for 2006, beating out budget constraints and regulatory compliance (see chart, next page).

Just ask Gordon Gregory, vice president of technology at Mazuma Credit Union in Kansas City, Mo. Even if his team finishes the five key projects planned for 2006, "there's a list of 60 more waiting in the wings," Gregory says. "Some of them just never make it to the top 10."

Here are the biggest project management challenges that IT will face in the coming year and tips for surviving them.

1. Global Teams

It's no longer considered exotic to have project teams stretched across the globe, whether through offshoring arrangements or business expansion. That's why project managers now have to prepare their staffs for overseas collaboration and a greater understanding of cultural differences. Such organizational readiness is sorely lacking today, Kapur says.

Take something as simple as syncing up country calendars, he points out. Some European countries have two to three times the number of national holidays as the U.S., and it's not uncommon for entire project teams to go on vacation for weeks at a time. In Israel, the weekend starts on Friday, when it's still Thursday in the U.S. "People like to say we can move the work to a 24/7 schedule, but if you don't plan well, people will be sleeping when you need to talk with them," Kapur says.

Language differences can also cause project delays, even among English-speaking employees. In India, for instance, the number "77744333" is verbalized, "triple seven, double four, triple three," Kapur points out. "What does that mean to someone who hears it for the first time?" he asks. "In IT, we deal with long numbers — that kind of misunderstanding can cause a three-day delay." One resolution: Have a document manager search all documents by keyword to translate local nomenclature to a standardized one.

Working with offshore programmers also poses additional management issues, such as high turnover rates, which can reach 25% to 30% among first-level technicians in India, Kapur says. "Knowledgeable companies are requiring offshorers to detail their plans on managing turnover and creating documentation standards," he says. They're also paying to have a knowledge manager at the offshore site to extract knowledge to be passed along to newly hired programmers.

For Bill Hagerup, senior instructor at Ouellette & Associates, relying solely on collaboration tools such as document-sharing systems, groupware, online conferencing and videoconferencing could be catastrophic. But that flies in the face of reality, where budgets are tight and travel is restricted.

As a result, Hagerup says, "I think we'll see some spectacular failures of major global projects, not because they couldn't make the technology work but because they couldn't work effectively together as a team. The only people I've seen manage global teams success-

fully spend 125% of their time talking on the phone with people and traveling to meet them whenever possible."

TIP: Take it from experienced global CIOs – you've got to get geographically dispersed teams face to face as often as possible, even though it means upping the budget. Hagerup's advice for project managers in 2006 is to negotiate the biggest travel budgets they can.

"We try to do face-to-face meetings at key junctures," says Jay Crotts, CIO in the lubricants and business-to-business segments of Royal Dutch Shell PLC. "It's extremely expensive, but the length of time that the project goes on dramatically drops."

2. Moving Parts

IT has never been very good at implementing multifaceted, multiyear projects, especially when teams are far-flung and there's less opportunity for close, intense interaction. One resolution, Hagerup says, is to break projects into smaller pieces and do a better job of identifying exactly what you want to accomplish within those microprojects.

"We're sending requirements offshore, and they're doing a great job implementing what we told them to do, but it's not necessarily what we really wanted," Hagerup says. Project managers need to do a better job of defining requirements and partitioning those requirements logically, resulting in more manageable project releases.

But defining requirements will get more tricky, not less so, says Johanna Rothman, president of Rothman Consulting Group Inc. in Arlington, Mass. That's because companies are increasingly eager to fund the projects that promise to address the greatest areas of risk to the business — which often means treading into unknown territory that's difficult to map without jumping in and seeing what you find.

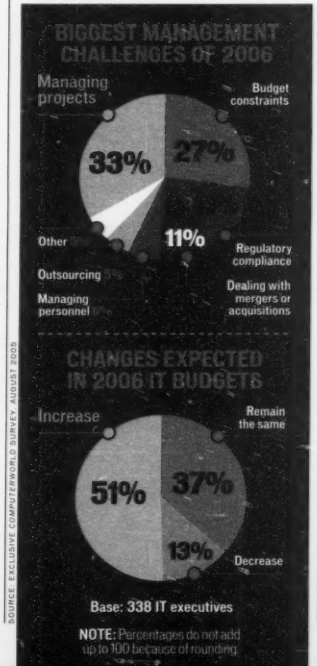
"Companies will fund the projects where the risk of not doing it is greater than the risk of doing it," she says. A good example is security. In Rothman's view, anything related to security will be funded in 2006, but these projects will involve risk because companies know so little about effective security policies and systems. "It's not a slam-dunk," she says. "There's a bunch of stuff we don't know how to do very well, and that's what's getting funded, because we can't afford not to."

Roger Agee, coordinating business systems manager at Jeld-Wen Inc., a door and window manufacturer in Klamath Falls, Ore., is already feeling the heat of more-complicated projects. Agee has had to respond to the project needs of his own fast-growing company. Those are often spurred by pressure from Jeld-Wen's strongly competitive and equally fast-growing vendors, which include big-box suppliers such as The Home Depot and Lowe's.

"These projects make your head swim," Agee says. "They used to be simple, like creating new reports or implementing a new database, but now our IS department is struggling to rethink how we effectively manage these new types of projects." Agee says these projects often aren't well defined, tend to cross departmental borders and require agreement among midlevel managers from different areas of the company.

For instance, a recent project involved a request to add a field to an order screen to accommodate sending custom orders directly to the consumer rather than to the store. This raised all sorts of questions about whether the delivery should be sent to a middleman and who would bear that extra cost, Agee says. But in fast-growing businesses, it's not always clear whom to approach for answers.

TIP: One solution to the problem is to assign the project to someone with a high level of responsibility who could see through those gray areas, obtain answers quickly and perhaps even answer them himself, Agee says.



3. Development

Riskier projects will also require more-creative approaches. For one of Rothman's clients, out-of-the-box thinking led to IT inviting the physical security team to help gather requirements for a data security project it was working on.

At first, there was a lot of frustration, as the two groups struggled to translate physical security ideas into what could be accomplished with technology. Eventually, IT used a more iterative development approach, where it focused less on predesign and instead plunged into coding, checking back frequently with the security team to get its feedback.

"The agile development technique is enabling people to start risky projects, because they know they can pull the plug before they've spent a lot of money," says Rothman. "You can do it in bits and pieces. If it's what users want, you keep going, and if not, you stop."

TIP: Rothman advocates iterative development in such circumstances because, she says, "trying to plan the whole damn thing never really worked and no longer works at all." But others, such as Kapur, point out the shortcomings of this approach, particularly with global teams. "If programmers are in India, Croatia and the U.S., it's much more difficult, if not impossible, to get timely feedback," he says. "People will be sleeping when you're looking for feedback."

4. Vendor Partners

With so many requests for projects, IT will increasingly turn to vendors, outsourcers and managed service providers to offload some of the burden so they can focus on core competencies.

"It's a resource issue," says Mazuma Credit Union's Gregory. "With the demand to do a lot of things in a relatively short time frame, there will be a tendency to rely more on vendors as partners in implementing projects." The two-edged sword is the loss of institutional knowledge, he says. "For future modifications, you can get caught in the trap of needing to go back to the vendor because of the expertise involved."

TIP: When relying on vendors and outsourcers, it's important to establish a single point of responsibility within the organization to sponsor and manage the project, as well as orchestrate the resources. "Responsibility cannot be outsourced," Kapur says. The person who plays this role needs to have a lot of clout with all the departments involved in the project, he adds, so that person likely shouldn't be someone from within IT. "You need someone who can say no to the business units and live to talk about it," Kapur says.

Prediction

COST-CUTTING MYTHS Projects in 2006 will be made more difficult by recurring myths about IT and competitive advantage, such as 'IT cost cutting is a strategy.' It's not just CFOs and CEOs pressing for greater cost control in IT, but CIOs as well. IT cost reduction is greatest when it supports a strategy for more cost-effective IT. In other words, cut the fat and strengthen the muscles and nervous system. Use improvements in technology, outsourcing and IT operations to shift the portfolio toward initiatives contributing to competitive advantage.

DON TAPSCOTT, CEO, NEW PARADIGM, TORONTO; **MIKE DOVER**, DIRECTOR OF SYNDICATED RESEARCH, NEW PARADIGM

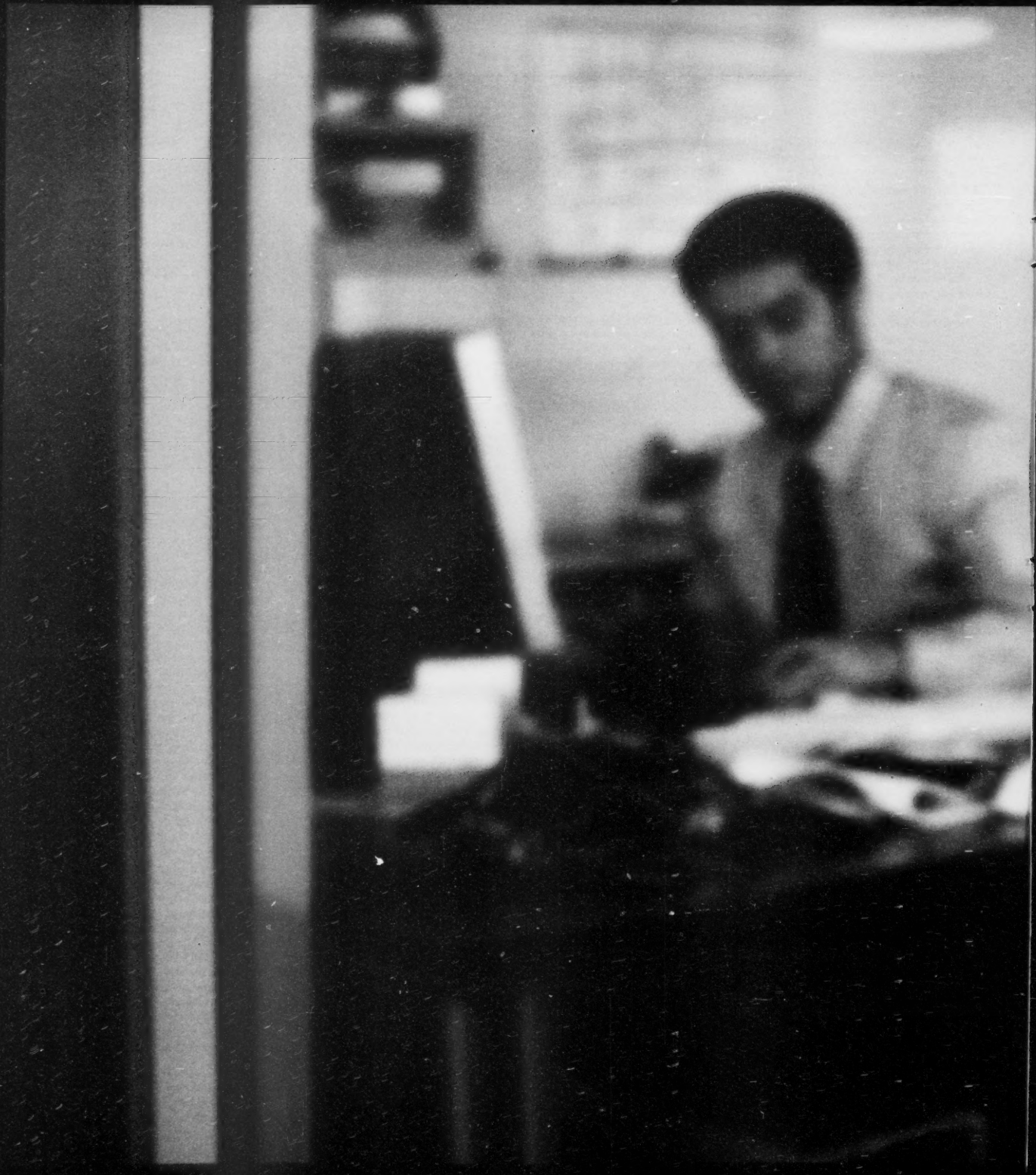
5. Project Portfolios

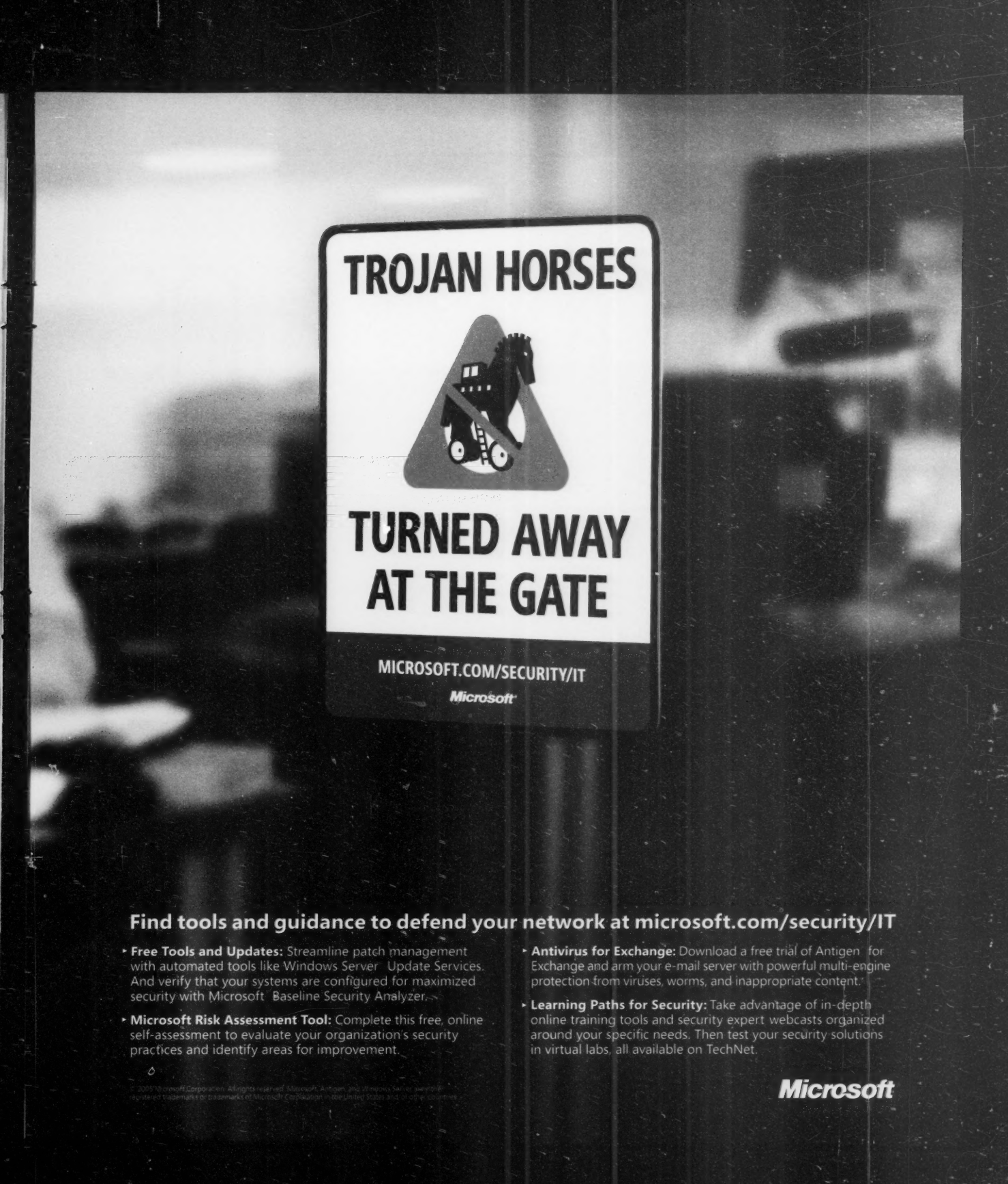
Long backlists of projects will also lead to more companies using portfolio management techniques. The theory behind portfolio management is to collect data about all project requests — including objectives, costs, timelines, accomplishments, resources and risks — that a manager can regularly review in order to allocate resources and adjust priorities to maximize returns. "You can't do it all at once, so you have to prioritize and set expectations so people understand what you're going to do and not going to do," Gregory says.

"As an industry, we don't do a good job of saying, 'We can't do this' or 'Here's what we can do, and if you want us to do more, we'll have to drop something else,' " Rothman says. That's why portfolio management will become more universal, she says. "There are so many pressures on IT to do more."

TIP: To get started on portfolio management, Rothman says, the most important thing is to fund only the projects you absolutely need. Second, make sure to ask how the project fits in with all the other projects going on – is it for a tactical or strategic objective? And third, review whether the company is ready to take on whatever is required for project success, including having adequate staff resources. "Project portfolio management doesn't have to be impossible, as long as we recognize we don't need to execute every project we consider," Rothman says. ▸

Brandel is a Computerworld *contributing writer. Contact her at marybrandel@verizon.net.*





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Priority Plans

These three projects will top many 2006 to-do lists.

CHRISTOPHER NIELSEN

WHAT'S NEXT: Security

Expect **THREATS TO GET NASTIER** as networks become more complex. **BY BOB VIOLINO**

MOST information technology managers have already devoted long hours to shoring up their companies' security — and they can expect more of the same in 2006. Attacks will likely come faster and with less warning, and experts predict that there will be attempts against a new range of applications and devices.

"You've got to be prepared for attacks coming from any direction," particularly because of the emergence of spyware, says Patrick Spampinato, IT director at a manufacturer of medical equipment in North Carolina that he asked not be named. "I think there are so many more ways that [intrusions] can affect you."

Bolstering security will clearly be a top job for CIOs and business executives. In fact, in an exclusive *Computerworld* survey of more than 300 IT executives, security initiatives ranked above all other project priorities for 2006 (see chart, next page).

Some experts predict that security threats will multiply in the coming year, as more hackers become proficient at breaking into systems and networks, and as viruses and worms spread more rapidly over the Internet.

In the past, security managers had three or four weeks from the time a vulnerability was first discovered until the first attacks exploiting that vulnerability would occur. But with more sophisticated hacking and virus writing, the time has shrunk to less than a week, Spampinato says.

The increasing threat isn't going unnoticed. A survey of 133 North American organizations conducted in 2005 by research firm Gartner Inc. showed that organizations are more concerned about viruses and worms than they are about any other security threat.

Next on the list of concerns was outside hacking or cracking, followed by identity theft and phishing. Half of the survey participants said they increased IT security spending for 2005 and expected to do so again in 2006.

THE NEW BREED

Paul Stamp, an analyst at Forrester Research Inc. in Cambridge, Mass., says he expects to see the emergence of viruses aimed at instant messaging applications and mobile devices, as well as "cross-platform" viruses that can affect a wide range of systems. He also predicts that there will be more attacks aimed at service-oriented architectures as they become more commonplace.

Some attacks will involve a complex combination of social engineering, a breakdown in processes, technical vulnerabilities and insider abuse, Stamp says. The best bets for thwarting those attacks include efforts to better monitor employees' activity and enforce security policies more stringently.

"Users aren't always aware of the threats they are subject to," Stamp says, so education will still be the most effective defense. Spampinato agrees, noting that education at the user level is a huge deterrent to security breaches.

From a technology standpoint, Stamp says many organizations will begin focusing more on secure designs — making sure their infrastructures are secure from the ground up through stronger authentication, encryption and other technologies. To date, many companies have emphasized threat-protection technologies rather than secure design, Stamp says.

Spampinato says his company will work to complement its perimeter defenses — such as network firewalls — by strengthening desktop security. To that end, the company will look into deploying products such as desktop firewalls and zone alarms and beefing up its desktop monitoring tools, he says.

As organizations allow more remote workers and outside users such as business partners and consultants to access corporate networks via laptops and other portable devices, monitoring systems within the corporate firewall will become even more important.

There will be a greater need for products that scan devices and help inhibit the spread of viruses and other malicious content when devices are plugged into enterprise networks, says Roberto Cavalcanti, senior vice president and CIO at Conservation International, a nonprofit environmental group in Washington.

Conservation International has offices, employees and partners around the world, and it faces a challenge that will be common to many organizations in 2006 and beyond: striking a balance between the need to keep networks and systems secure and the desire to

Top 10 IT PROJECT PRIORITIES for 2006

1. Security initiatives
2. Mobile and wireless rollouts
3. Data management/BI projects
4. ERP installations
5. Network management
6. Web services implementations
7. Customer relationship management
8. Server upkeep and upgrades
9. Vertical industry software
10. Internet applications

BASE: 338 IT executives

SOURCE: EXCLUSIVE COMPUTERWORLD SURVEY, AUGUST 2005

deliver information and applications to people who need those resources.

"Every big institution has more and more need to open its data resources to partners," Cavalcanti says. "We need to rethink the way we deal with security" in order to protect against information getting into the wrong hands.

Among the technologies that Conservation International is exploring or using are automated patch management systems that scan devices on enterprise networks to look for places that need to be patched and deploy the necessary patches when they become available from software vendors.

Conservation International is investigating Cisco Systems Inc.'s Network Admission Control products to ensure that computers plugged into its network have the proper level of antivirus and security patches installed, says Brian Freed, enterprise network director. The organization is also looking at hardware products from Symantec Corp. that offer intrusion-detection, antivirus and spyware-detection and -prevention technologies, Freed says.

Conservation International is currently using the Microsoft Windows Server Update Services to help it keep computers up to date with Microsoft Corp. updates.

COMPLIANCE CHALLENGES

While organizations will be exploring security technologies in the coming year, many will continue their efforts to comply with federal regulations such as the Health Insurance Portability and Accountability Act, which is designed to secure individuals' medical records, and the Sarbanes-Oxley Act, which is intended to protect investors by improving the reliability of financial disclosures.

Some managers expect regulatory burdens to increase as government officials weigh legislation on privacy and the confidentiality of personal data. Before 2006 draws to a close, there will likely be new state and federal laws regarding the protection of personal information, and organizations will have to figure out what they need to do to be compliant, says Phil Offield, information assurance officer at Liberty University in Lynchburg, Va.

Because some data-protection laws might leave room for interpretation, "I expect we'll go through a year or so of being confused on what we have to do to be compliant," Offield says.

Liberty University is developing a comprehensive information security framework that covers a broad number of IT processes and will include documentation of how processes are handled, and audits to ensure that people are complying with internal standards. Offield says the framework will help the university prepare for any future regulations on data confidentiality and other security-related issues.

Security and IT managers should prepare for what will surely be a hectic year of hardening their enterprise defenses. The stakes are high, and indications are that the challenges could be greater than they ever have been.

Violino is a freelance writer in Massapequa Park, N.Y. Contact him at bviolino@optonline.net.

CISOs Move Beyond Tech

TOP SECURITY executives will have some of the most fluid job descriptions in the industry this year. There will be a continuing separation of operational security from policy setting and oversight, predicts Paul Stamp, an analyst at Forrester Research.

"If you go into a room with CISOs today, they seldom want to talk about technology," he says.

Because there are so many demands on chief information security officers today – developing a long-range security strategy, overseeing risk management and regulatory compliance, and approving technology deployments – executives must delegate some of the less-strategic product-implementation tasks to people with more expertise in those areas, Stamp says.

For example, information security managers will delegate firewall installations and maintenance to network managers or administrators, who are better suited to track network performance and determine whether the firewalls are working optimally. Installing and maintaining antivirus software will become the responsibility of desktop administrators.

That will free up security executives to devote more time to the procedural aspects of security, as well as risk management and compliance issues.

– BOB VIOLINO

> **"Every big institution has more and more need to open its data resources to partners. We need to rethink the way we deal with security.**
>
> ROBERTO CAVALCANTI, CIO, CONSERVATION INTERNATIONAL

REPORTER'S NOTEBOOK: Security

REGULATIONS: THE BIG STICK

Compliance will dominate the security agenda for 2006. The growing number of regulations – and the consequences of not complying with them – have elevated security into the boardroom. CIOs will use compliance to justify most of their information security spending this year – even for technologies IT would have implemented anyway.

GOODBYE WORMS. HELLO TROJANS, ROOTKITS AND TARGETED ATTACKS.

Enterprises will keep getting better at dealing with e-mail-borne worms and viruses, and unless hackers come up with a fiendishly new way of delivering them, 2006 could well see the end of the mass-mailing worm phenomenon. But Trojan horses, rootkits, spyware programs, phishing and targeted attacks will continue to pose big challenges.

PATCH AND PRAY NO MORE

Hackers often take advantage of new software flaws faster than companies can apply patches. This year, the goal will be to prioritize patching based on asset value and specific threats rather than the more generalized patching processes currently in place. But the asset and data classification needed to enable such a patching process will be a major challenge.

SECURING THE DATA

Most security efforts have traditionally focused on securing the perimeter and the network using tools such as firewalls, antivirus software and intrusion-detection systems. This year, expect to see more attention devoted to securing the data residing in storage networks, databases, servers and desktops. Why? Because hackers and insiders have started going after the data and because traditional network perimeters have begun fading away as companies tie their networks with those of partners, suppliers and customers.

LOCKING DOWN THE NETWORK ENDPOINTS

One of the biggest threats to corporate security comes from insecure network endpoint devices such as desktops, notebooks and other client systems belonging to remote and mobile workers, contractors, partners and consultants. As a result, expect to see a lot – and I really mean *a lot* – of focus on tools that can permit, restrict or deny admission to corporate networks based on the security status of the end users' systems.

THE 800-POUND GORILLAS MOVE IN

Microsoft Corp. and Cisco Systems Inc. will expand their influence in the security market. But pure-play security vendors that offer more innovative, and enterprise-tested, products will continue to appeal to corporate customers.

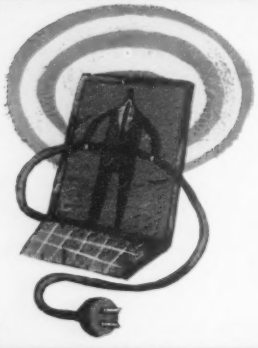
CISOs GET SOME R.E.S.P.E.C.T.

Information security may have become a boardroom issue, but most security executives remain anonymous Joe Somebodies when it comes to recognition at the C levels of their companies. I've lost count of the chief information security officers who have lamented their remarkable lack of visibility within their organizations – including one CISO who was never consulted by his CIO or CEO even after his firm suffered massive negative publicity following a major data compromise. But growing awareness of the potential reputational damage, financial losses and legal problems that a data breach can cause could improve the CISO's status in 2006.

– JAIKUMAR VIJAYAN

JAMES CALLOWAY

"We finally feel that the time is right" for rolling out wireless, says Safelite's ROD GHANI.



CHRISTOPHER NELSEN

WHAT'S NEXT: Wireless

Wireless will again make **SMALL GAINS IN BUSINESS EFFICIENCY.** BY MARY K. PRATT

ROD GHANI has watched the steady evolution of wireless for the past four years. A business enablement executive at Safelite Corp. in Columbus, Ohio, he has monitored developments, analyzing how wireless technologies could help Safelite workers become more efficient.

Now, he says, "we finally feel that the time is right."

The auto glass company is rolling out wireless handheld devices to its field technicians and will provide BlackBerry devices to 80% to 100% of its 2,000 field workers this year.

"It's the No. 1 project on my agenda," Ghani says.

A *Computerworld* survey of executive-level IT professionals has identified wireless technology as one of the top project priorities for 2006, second only to security initiatives (see chart, page 21). Despite its prominent position on the priority list, this technology hardly promises a revolution in how business is conducted, executives and analysts say. Rather, industry leaders say they're using wireless to speed transactions and cut costs, bringing important incremental improvements to how they get business done.

"Wireless technology will help us service the customer faster and better, as well as reduce our operational costs," Ghani concludes.

Safelite's technicians currently have to call centralized dispatchers at the beginning and end of each job and submit paper forms to be scanned into the company's systems. Wireless technology will eliminate many of those manual steps, Ghani says. Already, 200 technicians in the pilot rollout use handheld devices to remotely clock in and out, get work orders and issue status reports in real time. Safelite is now adding more capabilities to its handhelds so technicians can tender credit card payments and capture signatures.

Ghani wouldn't disclose the amount Safelite plans to spend on wireless this year, but he did say he expects a payback within 12 to 18 months, thanks to productivity improvements that the company should realize as the amount of phone traffic and paperwork drops.

But, he says, "the No. 1 goal [of wireless] is to be come more efficient and effective in serving our customer."

MAXIMIZING WIRELESS USE

Analysts see wireless deployments such as the one at Safelite as evidence of an evolution in how companies use wireless.

Ellen Daley, an analyst at Cambridge, Mass.-based Forrester Research Inc., says companies in 2006 and beyond will give more workers access to wireless capabilities and will install more applications on mobile devices. Those applications include sales force, field service and logistics tools.

"[Wireless is] allowing the field workers to stay out in the field longer to do their job," says Daley.

Prevari, a Minneapolis-based software company, lists a wireless WAN as its biggest initiative for 2006.

"We really need to enable our road warriors with access to our trusted network," says Prevari's chief operating officer, Jerry Jeschke. "It's the need for independent, anytime, anywhere access."

As it stands now, Prevari's four salespeople and consultants must work from hotels or access the Web at customer sites, which the salespeople feel is an imposition on clients, Jeschke says. That means a delay in accessing information — and that delay could play a role in determining whether the rep makes the sale.

Prevari soon will equip its field workers with Dell Inc. laptops and a yet-to-be-picked national cellular service so they can remotely access the company's network.

"It's about a level of customer service, an incrementally better level of customer service, which over time differentiates us from other companies," Jeschke says.

After years of letting wireless devices filter into their organizations, com-

Security Trumps

MANY IT WORKERS have found themselves managing equipment they never bought or authorized. This is happening because employees have been introducing their own wireless devices into organizations, thanks to their low cost and mobile nature – certainly not the best security situation.

IT departments are getting a better handle on those rogue devices, but experts say IT leaders must keep security in the forefront as they roll out wireless initiatives in 2006. "Without a doubt, the biggest question I get is about security," says Ellen Daley, an analyst at Forrester Research.

Brad C. Johnson, vice president at SystemExperts Corp. in Sudbury, Mass., says wireless security still lags behind security on other systems. Thus, companies need to pay particular attention to the policies and procedures that will keep their data safe.

Johnson says companies should outline who uses wireless for what purposes. They should also ensure end-to-end security with passwords, authentication, authorization and encryption. In addition, companies should work with carriers to allow audits in which they can reconstruct or follow the trail of data.

Companies with their own wireless networks have additional concerns, Johnson says. For example, they need to address what happens when employees put sensitive data on their personal devices via the company's network but then use the devices outside the corporate network. How can that data be protected?

Companies should also step up their antenna management to know how far their own wireless networks extend. Johnson says surveying is key when trying to prevent people from eavesdropping or improperly using the network.

– MARY K. PRATT

panies are beginning to demand more analysis of how wireless can improve their operations, says Daley. They're developing policies for how they use wireless and determining who should get what device and for what reasons.

"Companies are being very strategic about their wireless," she says.

Purdue Pharma LP is a good example. Officials there say they know exactly how wireless fits into the company's IT infrastructure and business goals.

The pharmaceutical company installed a Cisco 802.11b infrastructure in 2001 to "support the mobility of our laptop users and to support consultants and visitors who would need Internet access," explains Purdue Pharma Vice President and CIO Larry Pickett.

Stamford, Conn.-based Purdue Pharma this year plans to upgrade to support the 802.11b/g standard, which Pickett says will enable his IT department to improve the system's security and management.

He says it's a case of "getting more for less."

Purdue stands out, though, for its advanced use of wireless. Julie Ask, research director at JupiterResearch, part of Jupitermedia Corp. in Darien, Conn., says most companies still use wireless for voice, e-mail or instant messaging.

However, she says, companies are increasingly looking at wireless for applications supporting business functions such as customer relationship management and sales. And she predicts that the trend will strengthen as wireless networks get faster and as more municipalities deploy Wi-Fi that blankets entire regions.

"It's not really a ubiquitous thing yet, but it will be. We're seeing a lot of exciting stuff now that gives us a glimpse of what's ahead," Ask says. "But I don't think the market will mature in '06. I think we're just at the beginning." ▸

Pratt is a Computerworld *contributing writer in Waltham, Mass. You can contact her at marykpratt@verizon.net.*

REPORTER'S NOTEBOOK: Wireless

IT ALL COMES TOGETHER

Convergence will continue to be the biggest story in 2006, as private companies and the public sector ramp up more voice over IP along with their data networks. Despite some well-publicized worries about security, portions of large organizations will adopt IP telephony. But other portions will continue on legacy circuit-switched voice technology while IT managers move ahead conservatively as they worry over finding the killer application. The common interface over IP will continue to affect wireless communications as well, since IP offers a means for providing interoperability across proprietary networks.

RISKY BUSINESS

Consolidation among networking vendors seems to be in order this year, following mergers by several service provider giants that were announced in 2005. Nortel Networks Ltd. has a new CEO, but it could be an acquisition target – but with $11 billion in revenue, it would be a large bite. Computer Associates International Inc. (which is shortening its name to CA), having weathered years of problems, still could be absorbed by a networking hardware company seeking to scoop up CA's customer base.

On the buying side, Cisco Systems Inc. will again be on its annual hunt to find 15 to 20 small vendors to acquire as it evaluates promising emerging markets. Cisco wants to be a systems company, not just a networking vendor, so there could be a lot of excitement from John Chambers and company.

COMING ATTRACTIONS

Cisco will release its Internet Protocol Interoperability and Collaboration Systems (IPICS) technology, offering interoperability between fire and police radios and other emergency systems using IP. As a result, thousands of emergency jurisdictions won't need to buy new radios – if municipalities and states can overcome politics to work together. IPICS could also mean better productivity at private companies, especially in large shipping or transportation operations with multiple networks.

Palm Inc. will roll out its Treo handheld for the BlackBerry Enterprise Server, giving financial analysts and other BlackBerry users an effective alternative to Research In Motion Ltd.'s device.

ALPHABET SOUP

In wireless, 2006 will be an alphabet-soup year, with 802.11i and 802.11n moving ahead. The 802.11i standard improves Wi-Fi security; it was approved in 2004, but more products will incorporate it this year. The 100Mbit/sec. Wi-Fi standard 802.11n faced a fractious year in 2005 among members of the IEEE standards body. But the high-speed standard will eventually gain acceptance, supplanting 802.11a, b and g. Let's hope they don't discover Greek letters.

WiMax will also gain ground, possibly reaching beyond consumers to include home-based workers who want to replace Digital Subscriber Line or cable modems.

– MATT HAMBLEN

Predictions

REMODELING THE IT HOUSE

The IT house needs to be remodeled or replaced. With higher density technology that is power-hungry and cooling-needy (as measured by demand per square foot of space), the old wiring of the data center or office closet just can't work. Whether it is refitting the old space or acquiring new space – at higher and higher reliability – "This Old IT House" requires that every CIO have a Bob Vila and the money to make it happen. This unexpected and new challenge is costly and complex. The economics of the New Age data center will set the foundation for the economics of IT for years to come.

HOWARD A. RUBIN, SENIOR GARTNER ADVISER; PROFESSOR EMERITUS, COMPUTER SCIENCE, HUNTER COLLEGE OF THE CITY UNIVERSITY OF NEW YORK

DUAL-CORE GAINS

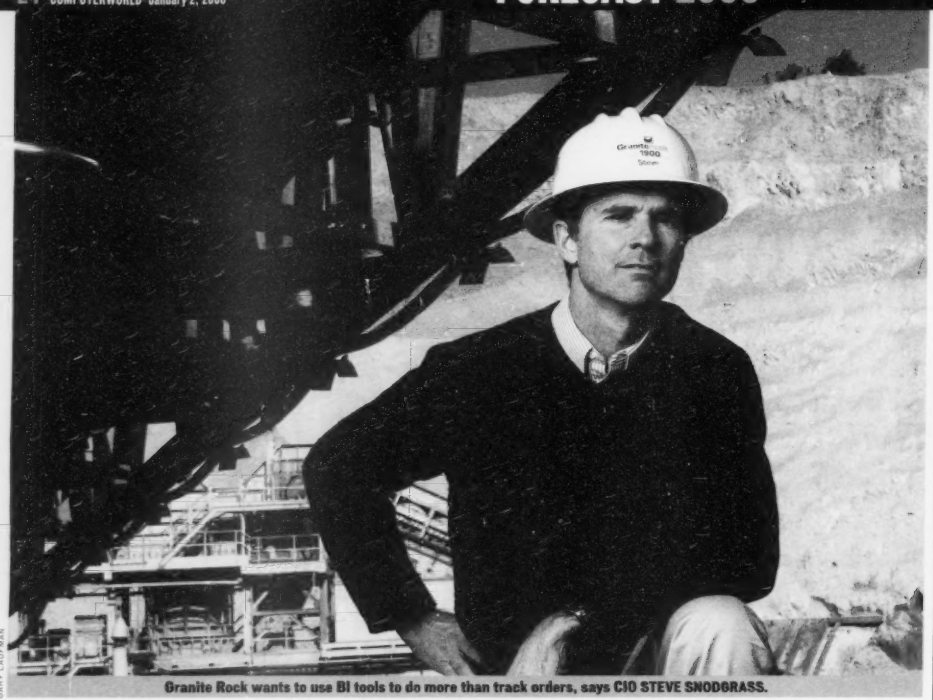
I predict dual-core technology will gain momentum if certain software vendors modify their licensing policies. Dual-core servers provide a substantial percentage of performance gains over a single core while consuming less energy and rack space. AMD will lead this agenda with their 64-bit architecture. Thanks to these relatively inexpensive servers, companies will begin to see the cost benefit of solutions such as Linux and Solaris x86.

ELVIS CERNJUL, DIRECTOR OF TECHNICAL SERVICE, DIRECT HOLDINGS WORLDWIDE LLC, VIRGINIA BEACH, VA.

UBIQUITOUS RFID

Despite uproars from privacy advocates as well as civil libertarians, nanotechnology will be put to greater use as a means for authentication. The war on terror will be used as a driver to enable the ubiquitous use of RFID in driver's licenses, passports, credit cards and cell phones. This issue will surely be a political hotbed, and we may see technology, as it relates to privacy and protection, become a platform issue in the upcoming presidential race.

MARC GARTENBERG, SECURITY CONSULTANT AND COMPUTERWORLD.COM SECURITY COLUMNIST



GARY LAUFMAN

Granite Rock wants to use BI tools to do more than track orders, says CIO STEVE SNODGRASS.

CHRISTOPHER NIELSEN

WHAT'S NEXT: Business Intelligence

The number of BI vendors will drop, but **SOFTWARE CHOICES WILL MULTIPLY.** BY JENNIFER McADAMS

DON'T EXPECT floodgates to burst, but the number of business intelligence users will swell in 2006, as corporate buyers insist that the technology break free of its limited use among data analysts and specialists.

There will be attempts to rope in average corporate knowledge workers, supply chain partners and customers. Helping to lure more mainstream users will be less-complicated querying techniques and basic but creative ways of presenting information gleaned from once-intimidating BI and data warehousing tools.

While the number of BI users will jump, the number of vendors serving up BI systems could diminish slightly over the year as industry consolidation continues. Look for mammoth database suppliers and others to grab at the remaining flock of BI vendors, many experts predict.

Show-stopping acquisitions, however, won't be this year's major BI story. "The big trend in 2006 will be bringing BI to the masses and getting beyond the power users," says Dan Vesset, an analyst at research firm IDC in Framingham, Mass. In fact, in an exclusive *Computerworld* survey of 338 IT executives conducted in August, respondents ranked BI third among projects planned for 2006 (see chart, page 21).

BUILDING SELF-SERVICE

Broadening its base of BI users is a high priority for Granite Rock Co., a construction products company in Watsonville, Calif. Further, the company wants to push extensive use of its analytical data not just within company walls but among its customers and suppliers as well.

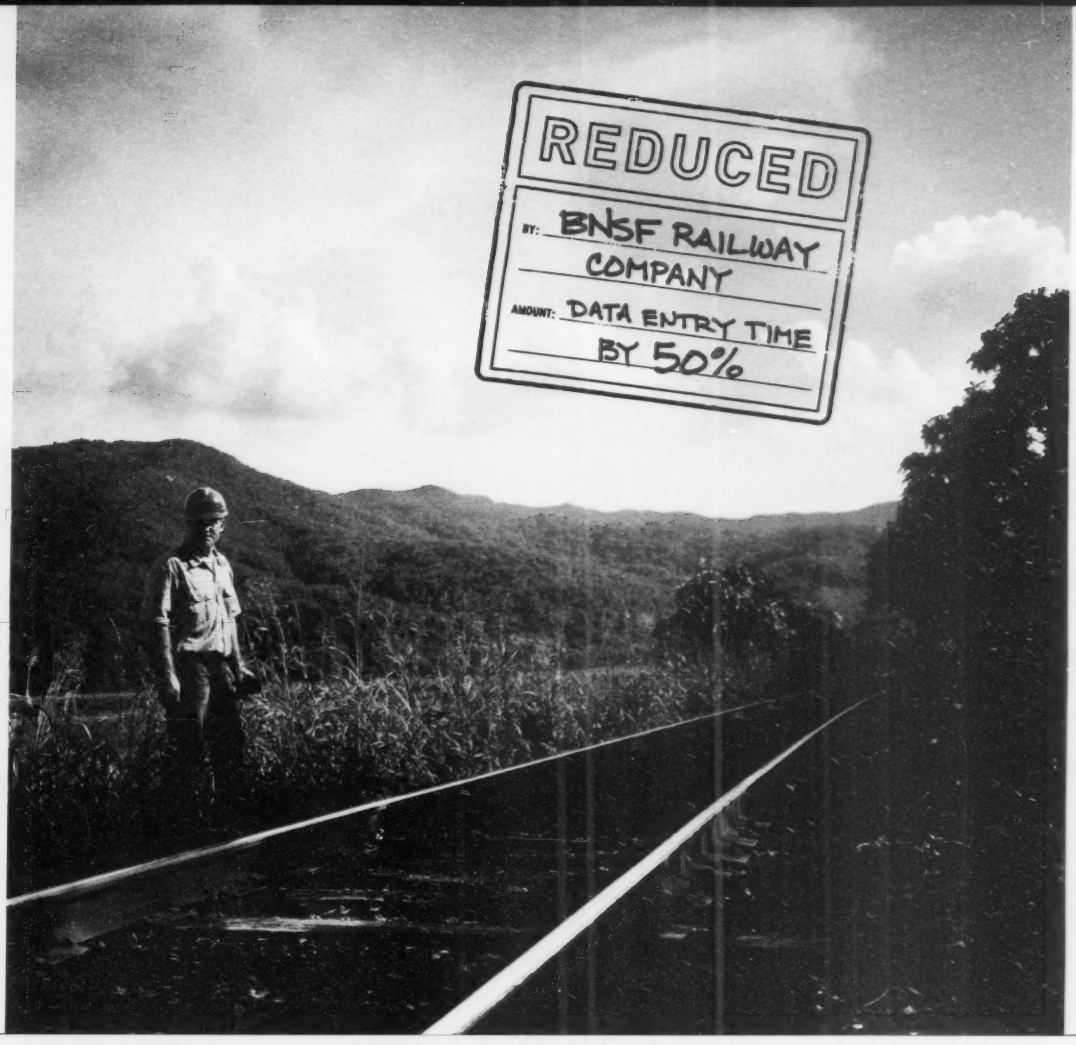
"Right now, we are using our BI tools to generate on-demand statistics and process-control reports," explains CIO Steve Snodgrass. Specifically, the company uses Business Objects SA's Crystal Enterprise to generate graphic information and other data on construction supplies, such as concrete or asphalt, for quality control.

"You may think concrete is just concrete, but if you are building a house and one load of concrete appears more green and the next load appears more yellow, your customer won't be too happy," says Snodgrass. Yet, in the coming year, Granite Rock wants to go beyond improved order tracking and increased product integrity. "We want to do more in the way of customer self-service," Snodgrass says.

For instance, the company already generates automatic e-mails to customers on the status of trucks coming and going from Granite Rock's various plants. Soon the company will take this a step further. "We want to tie a lot of this information to customer portals, where it can be self-served," Snodgrass explains. "That way, a customer can log in at 8 o'clock at night and get the information he or she needs."

Dashing out status reports and BI analytical data to both internal and external users will become crucial in 2006. "You may see flat-screen monitors in the CEO's office telling him minute by minute what his business is doing," observes Donald Feinberg, an analyst at Gartner Inc. in Stamford, Conn. "Visualization of BI data will become more

Continued on page 26



With Sybase® software, BNSF Railway Company developed a mobile application that enables remote workers to document railway maintenance and:

- ☑ **Cuts data entry time by approximately 50 percent**
- ☑ **Provides more accurate and timely data**
- ☑ **Delivers software and database updates automatically**

For most organizations, maintaining 32,500 miles of rail lines would be a colossal headache. But for BNSF Railway Company, it has become a competitive advantage. Because they have an information edge that comes from Sybase SQL Anywhere® and Adaptive Server® Anywhere software. Now, BNSF remote workers can input data on location (vs. waiting until the end of the day). Headquarters has more visibility into the field. And maintenance decisions are made more proactively. Just a few reasons why more and more global companies are using Sybase every day to keep their business on track. **www.sybase.com/infoedge22**

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SYBASE®

10 TECHNOLOGIES most important to their companies today:

1. Security
2. Mobile and wireless
3. Network management
4. Web services
5. E-mail/collaboration
6. Data management
7. Storage
8. Servers
9. ERP
10. Internet applications

BASE: 338 IT executives

SOURCE: EXCLUSIVE COMPUTERWORLD SURVEY, AUGUST 2005

Continued from page 24

and more available and easier to use."

Various visualization technologies now hold great appeal for corporate officials, says Scott Zimmerman, CIO at CenterPoint Properties Trust, an industrial property management company in Chicago. "I definitely think that everybody's executive board or executive committee is in love with the idea of a dashboard," he says. CenterPoint has built its BI system internally, relying on capabilities inherent in Microsoft Corp.'s .Net platform and Windows SharePoint Services technology.

While CenterPoint's top officials want to explore better BI visualization techniques in 2006, Zimmerman claims that the company first wants to break down barriers to widespread use of its data warehousing application. "The biggest struggle for us is to find the balance between flexibility and complexity," he notes.

IT executives at New York publisher Simon & Schuster Inc. also yearn for better ways to deliver and display BI data and move away from basic columnar reports, says Paul Zanis, director of corporate architecture. "We are looking at dashboards and other solutions, but we have not done much in the way of visualization," he says.

FAST AND CLEAN

Simon & Schuster's main drive in 2006 will be similar to CenterPoint's: the pursuit of improved BI applications that come across as friendlier to the average user. To help make that happen, the publishing company is turning to BusinessObjects Enterprise XI, says Zanis. "We want an application that has a look and feel that is cleaner to the user and has an interface that is less intimidating to those users accustomed to paper reports," he says.

Simon & Schuster also wants a system that requires minimal training. "In our industry, there is a lot of turnover between the large publishing houses," Zanis says. "When we put someone new in a particular role, that person must be able to get up to speed quickly in terms of reports."

Overall, expect the BI industry this year to churn out tools that appeal to a broader audience. Fueling that trend will be steady interest from database vendors and other large companies interested in acquiring specialty BI vendors, predicts IDC's Vesset. "The whole applications area is going through a lot of consolidation, but there are still quite a lot of BI vendors out there," he says.

As this industry evolution takes place, however, the focus will remain steadfastly on efforts to move BI out to the average user. "The whole trend is not use of BI in executive offices, but BI capabilities that can be used by any executive, line manager or employee," says Vesset.

McAdams is a freelance writer in Vienna, Va. You can contact her at jjwriterva@aol.com.

Queries for the Average Joe

TO GET TO THE POINT where it doesn't take a data analyst or trained specialist to use BI and data warehousing tools, vendors will have to shore up querying capabilities, experts and corporate users agree.

"Many BI tools have the promise of less technically skilled users being able to easily write ad hoc queries, but few deliver on it," says Karen Klein, senior vice president of marketing services at Aegon Direct Marketing Services Inc., a Baltimore-based direct marketer of life and supplemental health insurance.

Aegon uses BI tools from SAS Institute Inc. in Cary, N.C., to keep statistics on its marketing results. However, average users must rely on trained power users for help in extracting data from the system, Klein says.

"Next year, we will be rolling out a BI tool that has the promise of adapting the writing of queries based on a user's knowledge and skill set," Klein explains. "Therefore, this person will be able to write their own ad hoc queries."

Many BI vendors are hustling to make data queries easier. "The goal is to have the average user be able to develop a question without having to consult an expert," says Dan Vesset, an analyst at IDC.

– JENNIFER McADAMS

> **"We want to do more in the way of customer self-service. We want to tie a lot of this information to customer portals, where it can be self-served. That way, a customer can log in at 8 o'clock at night and get the information he or she needs.**
>
> STEVE SNODGRASS, CIO, GRANITE ROCK CO.

REPORTER'S NOTEBOOK: Business Intelligence

THE BIG NEWS

Business intelligence in 2006 will continue to emerge from its traditional confines of historical reports used by statisticians or business analysts. Instead, BI will deliver real-time or near-real-time data that employees at all levels of the enterprise can use to make daily decisions.

Many bleeding-edge companies began to tentatively explore this notion of "operational BI" in 2005. But I expect many more to move toward this new level of BI by shortening the time it takes to get data from transactional systems to a data warehouse and by linking BI with business process management (BPM) tools.

SPEED THE FEEDS

The move to operational BI may mean eschewing the extract, transform and load tools that once were on any IT manager's checklist for a BI project. Instead, companies will need to feed data directly from transactional systems to a data warehouse so they can send fresh data to front-line employees and executives.

Klaus Mikkelson, global development leader at building materials company Owens Corning, now gets daily or twice-daily data feeds about gross margins from his warehouse from multiple ERP systems, using integration tools from Ascential Software Corp. This year, he says, he'll prepare for more-frequent feeds.

BI vendors began forging close alliances with enterprise information integration vendors in 2005 to help users get a single point of access across disparate systems for speeding warehouse feeds, and I expect this trend to continue.

MICROSOFT MANEUVERING

The biggest story of the year might be Microsoft Corp. muscling in on the market stronghold of traditional enterprise BI vendors. SQL Server 2005 will allow users who don't know how to use Visual Studio programming tools to build reports more easily. Microsoft already was gaining ground in the BI market with the BI reporting features that come free with SQL Server. These new features – plus Microsoft's intention to provide added support for developing applications with the popular Excel front end – will only make Microsoft's BI push more attractive to SQL Server and Office users.

IT'S ALL ABOUT PROCESS

While 2005 saw the increasing intersection of BI and performance management, in 2006 more vendors will respond to user demands to link BI and BPM so users can take action when transactional data veers outside of normal ranges. But will these demands for process management give enterprise application companies like SAP AG and Oracle Corp. an advantage over traditional BI vendors?

John Hagerty, an analyst at AMR Research Inc., told me recently that many users are looking to companies such as SAP, Oracle and Siebel Systems Inc. (which is now owned by Oracle) that have ownership of the enterprise application data and are infusing their applications with analytics and associated processes to take action on trends that surface. I expect BI vendors to come under pressure from these enterprise application vendors that have the ability to link BPM with BI. Many might align with BPM vendors or acquire technology to add to their product portfolios.

– HEATHER HAVENSTEIN

REPORTERS' NOTEBOOKS:

Operating Systems

OPEN-SOURCE DESKTOP ALTERNATIVES

Novell Inc. and Red Hat Inc. will continue to try to crack Microsoft Corp.'s domination on the desktop, focusing on the cash-strapped public sector. Both have new desktop releases scheduled for next year – Novell around midyear, and Red Hat by year's end – but they'll continue to face an uphill climb.

One of Red Hat's major areas of focus is "stateless Linux," to allow users to gain access to a stored desktop image and preferences from a remote location. Novell's main project is unifying the code base for its Linux client and server offerings.

"What we're going to really try to do is position ourselves as the enterprise play in the marketplace," says Ron Hovsepian, Novell's president and chief operating officer. "The way we accomplish that is by having the binary compatibles inside the server version all the way to the desktop, so no matter where the customer wants to use Linux, they're going to have one common code base."

– CAROL SLIWA

Storage

2006 IS iSCSI'S YEAR

Many predicted that 2005 would be the year of iSCSI, but there just weren't enough companies using it to persuade the majority to begin testing it. In 2006, trust levels in this Ethernet-based networking standard will be way up. Expect to see iSCSI begin to bite into Fibre Channel's market this year, particularly in small and midsize businesses where Fibre Channel had just begun to penetrate. This past year, iSCSI was used mainly for Wintel server consolidations, but expect to see more users deploying it as their primary storage network because it offers such big savings and ease of use. With iSCSI, IT managers don't need to install costly and complex Fibre Channel switches or hire the specialists needed to manage them. And most users agree that Ethernet's 1Gbit/sec. speeds are more than enough for most business applications, with the exception of very high-intensity transactional databases.

– LUCAS MEARIAN

Enterprise Systems

THE NEW ORACLE

Oracle Corp. – the now bloated, No. 2 vendor after SAP AG – is no longer a nimble and macho competitor. Like Alexander the Great after conquering the known world in a few years, Oracle has to be politically sensitive, avoid riling the natives, make treaties (with IBM, Microsoft and SAP, among others), avoid tampering with the local religions (Oracle is pushing for an all-Java, all-integrated stack) and maybe even encourage a few marriages (more WebSphere and DB2 interaction). And like Alexander with his Macedonians, Oracle can't forget the initial troops it started with when it left the shores of Redwood Shores: Oracle users.

– MARC L. SONGINI

Servers

THE BIG BOX IS BACK

Aided by two technology trends, users will increasingly turn to virtualization technologies on x86 systems to boost server utilization. First, dual-core chips will deliver the performance users get today from two single-processor systems. Second, Intel Corp. and Advanced Micro Devices Inc. are adding virtualization capabilities on the chip. These efforts, called Vanderpool and Pacifica, respectively, will improve virtualization performance and give x86 chips abilities similar to what's available on Unix systems and mainframes. The combination of dual-core chips and virtualization will increase server utilization and reduce the need for discrete servers.

MUST-SEE CONFERENCE

Most IT industry conferences are CIO-focused and vision-drenched – not that there's anything wrong with that. But if you want to get a solid, bottom-up view of the challenges involved in implementing that vision, then attend an AFCOM show. This Orange, Calif.-based group holds two big conferences a year that are attended by hundreds of data center and IT managers with an operations focus. FYI: The boxed lunches are as good as those handed out to CIOs.

– PATRICK THIBODEAU

10 Predictions FOR 2006

An IDG News Service reporter offers her picks for the year's top IT stories. **BY NANCY WEIL**

1 AT ODDS OVER OFFSHORING

Furious debate over the offshoring of IT jobs and services jobs will continue, sparking another round of state and U.S. federal "protectionist" legislative proposals early in the year. Most of those proposals will wither and die. Economists and policy analysts will argue back and forth about whether IT jobs are indeed being "lost" to India, China and other nations or whether the movement is predictable churn in a global economy. The thousands who continue to be laid off won't care to hear the debate, since they will have already formed their opinions about what is going on and why. ("Corporate greed" will be the answer for many of them.)

2 OPEN-SOURCE UNDER ATTACK

Hackers will successfully launch an attack on a widely used open-source application (Firefox?). Although it will be quickly patched and not lead to the sort of turmoil and damage that has occurred with other major attacks on proprietary software, it will make those who use open-source software realize that they really do need to update and apply patches expeditiously. Otherwise, Sober will continue to spawn variants and security will remain a top concern.

3 GAMING CONSOLE BATTLE ROYALE

Sony Corp.'s PlayStation 3 and Nintendo Co.'s Revolution game consoles will prove to be worth the wait in long lines and will globally outsell Microsoft Corp.'s Xbox 360 by a wide margin. The Xbox will find more favor in the U.S., but even there it will lose its luster when the competing consoles hit the market. Game Boy Micro will be to the handheld gaming market what the iPod Nano is to the MP3 market – having one will be a universal sign of cool.

4 VISTA MAKES A SPLASHY DEBUT

Speaking of Microsoft, the software monolith will frequently make news, as it does every year. The company is putting extreme pressure on itself to deliver Windows Vista on schedule, so expect the operating system to be available on a PC near you by this time next year. Microsoft also hopes Vista's launch will make a huge splash, so don't be surprised if the company coaxes an aging rock band out of retirement to perform at its inaugural event. But if Windows history repeats itself, even shipping Vista a year later than Microsoft first planned won't make the operating system completely foolproof – expect Patch Tuesday to be busier than usual in the months following the release. Business users may be hesitant to adopt Vista until some of the bugs are worked out.

5 OPEN-SOURCE GRABS A FOOTHOLD

Linux will make more inroads on the desktop, and in governments, schools and other public institutions that don't have much money to spare as they increasingly turn to open-source software as an option. An increase in the number of people using open-source at work will lead to more interest in open-source use among home PC users, who will spread the word that it really is easy to use. Proprietary software companies, grudgingly or not, will get with the open-source program, so to speak, and by the end of 2006, they will – publicly, at least – no longer be arguing about the merits of open-source.

6 PATENT LAW REFORM HITS A BOILING POINT

Research In Motion Ltd. will largely prevail in the re-examination of NTP Inc.'s patents in the infringement case brought by that company, but not quite enough to avoid an interruption in RIM's popular BlackBerry service. Because of the popularity of BlackBerries among lawmakers, their aides and others who work the corridors of Washington, the need for patent law reform will be pushed to the fore, and by year's end there will be something close to progress in that regard.

7 GOOGLE'S DOMINANCE GROWS

The Google-ization of the Internet and, therefore, the world will quicken in 2006. Competitors will try to keep pace. Google Inc. will lose some of its luster as a consequence of it becoming more diluted – spreading more into services – but it will ably cover missteps well enough that it will dominate as both a search engine and an Internet empire.

8 AOL GOES ON THE BLOCK

America Online Inc. will be bought. We don't know who will buy it, but mark our words that it won't be part of the Time Warner Inc. empire by the end of 2006. Also – and we know this one is a given – the trend of major multibillion-dollar acquisitions will continue, with the software market continuing to consolidate and IP communications and telecommunications markets also ripe for deals. Our crystal ball sees deals on the order of the 2005 acquisition of Siebel Systems Inc. by Oracle Corp. and eBay Inc.'s purchase of Skype Technologies SA.

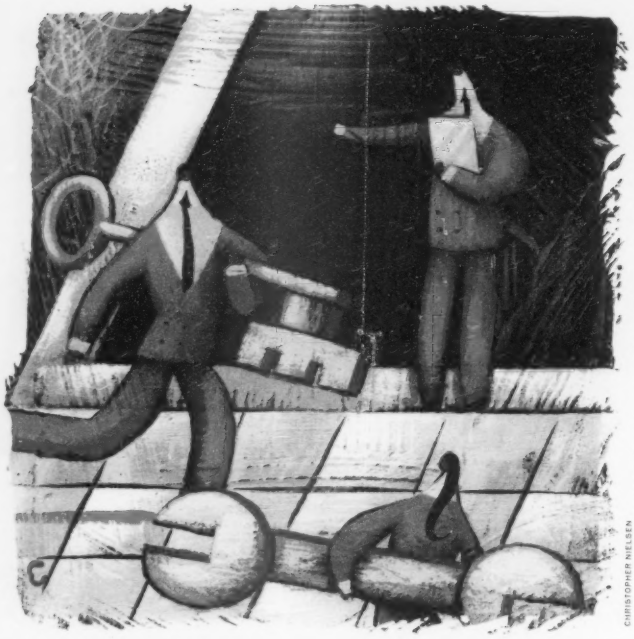
9 MULTITASKING CONSUMER DEVICES ARE HOT

In the consumer market, vendors will keep talking about "convergence." Users won't care what it's called – they'll just keep pushing demand for mobile phones that also work as cameras and organizers, but they will also keep buying ever-cheaper digital cameras in droves. At home, they'll come around to IPTV, but slowly, and plasma TV sales will pick up. And no matter where they go, users will carry their trusty MP3 players, with ever-older folks among those who are never without their tunes.

10 THE YEAR OF THE BLOG

One word: blogs. The blog craze will make the Internet an ever more interactive medium and a hot global social-networking scene, leading far too many people to spend way too much time online. (You know who you are!)

Elizabeth Montalbano in San Francisco contributed to this report.



CHRISTOPHER NIELSEN

DEVELOPERS, SECURITY EXPERTS and **PROJECT MANAGERS** will be hot properties this year. **BY THOMAS HOFFMAN**

Skills Scope

WHETHER YOU'RE looking for a job or looking to fill one, expect hiring to heat up this year, driven by small but consistent gains in IT budgets. And if you're a job seeker with the right skills, this could be your big year.

Despite the notion that hordes of U.S. IT jobs are being sent offshore, in reality, less than 5% of the 10 million people who make up the U.S. IT job market had been displaced by foreign workers through 2004, says Scot Melland, president and CEO of Dice Inc., a New York-based online jobs service. The numbers of jobs posted on Dice.com from January through September for developers, project managers and help desk technicians rose 40%, 47% and 45%, respectively, compared with the same period in 2004, says Melland.

In fact, an exclusive *Computerworld* survey revealed that two of the top four skills IT executives will hire for in the coming year are perennially linked with outsourcing, namely, application development (ranked first) and IT help desk skills (ranked fourth). Information security skills ranked second, and project management came in third (see chart, next page).

Here's what staffing experts have to say about the demand in these hot skills areas.

1. Desperate For Developers

There's a lot of talk about developer jobs being sent overseas, but "most of the stuff that's going offshore is low-level coding jobs," says Craig Symons, an analyst at Forrester Research Inc. in Cambridge, Mass. Over the past year, companies have started working through their backlog of IT projects. As a result, says Symons, demand for developers with .Net and Java skills has increased, as has the need for business analysts and IT relationship managers who work with business managers to understand their divisions' requirements.

Case in point: An employer that was working with Talenthire.com, a job placement service in Atlanta, was recently negotiating salary terms with an entry-level C++ and .Net developer. The technician, who had graduated from college in 2004 and probably started his career making $40,000-plus per year, quickly moved up in salary by about $10,000, says Mike Veronesi, a managing partner at Talenthire.com. After Talenthire.com's customer offered the candidate $60,000, he demanded $62,500. "In this marketplace, those people are just tough to get," says Veronesi.

"Customer requirements [for developers] are getting much more specific," says Jim Lanzalotto, vice president of strategy and marketing at Yoh Services LLC in Philadelphia. "The requirement used to be 'Give me a good CRM developer,' " says Lanzalotto. "Now, the requirement is 'Give me a good CRM developer with specific experience in the pharmaceutical industry.' "

NStar, a Boston-based energy utility, is hunting for developers with the power-industry experience needed to support its supervisory control and data acquisition environment, says Eugene Zimon, senior vice president and CIO at the company.

"I would see the need for application developers as much more specialized in terms of developing integration components, user interfaces and reusable components," says Zimon. "It's application development, but it's much more specialized and targeted to make use of your existing infrastructure."

WHAT'S HOT

The top skills IT executives will be hiring for in 2006:

Programming/application development	88%
Information security	74%
Project management	67%
Help desk/technical support	60%
Data center/databases	52%
Networking	50%
Telecommunications	13%

BASE: Respondents who said they would be hiring in 2006. Multiple responses allowed.

2. Seeking Security Mavens

There's continued demand for people with information security skills, say Symons and others. And even though long-term demand is expected to remain strong, the growing ranks of people who have obtained IT security certifications has had a short-term dampening effect on compensation.

David Foote, principal and chief research officer at Foote Partners LLC in New Canaan, Conn., says there has been strong demand for people with Cisco security skills as well as those with IT auditing certifications. Still, he says, compensation for security skills has tapered off in recent months as many unemployed and underemployed IT workers have obtained security skills to become more marketable. The resulting increase in security specialists has helped to deflate wages, at least in the short term, says Foote.

Dice's Melland says he's starting to see skills shortages in different geographies, including a need for network security experience and government security clearances.

To meet its own changing business requirements, NStar is adjusting its skill mix of full-time IT workers and contractors through attrition, new hires and retraining, says Zimon. High on its list are security analysts because NStar is in the final throes of a four-year effort to create a team of security and risk management specialists.

3. In Pursuit of Project Managers

As the economy continues to improve, companies are beginning to attack their backlog of projects, which is helping to fuel the demand for project developers. As a result, project managers with specific expertise — like those who have worked on projects related to Sarbanes-Oxley Act and Health Insurance Portability and Accountability Act compliance — are becoming harder to find, says Frank Enfanto, vice president of health care services systems delivery at Blue Cross and Blue Shield of Massachusetts Inc. in Boston.

"There are a lot of security- and compliance-related requirements that are driving a lot of the spending in projects these days," says Enfanto.

Location is another issue. "It's really frustrating trying to find project managers in this geography," says Mark Uihlein, vice president of information systems at Mohegan Sun, a gaming and resort company in Uncasville, Conn. Aside from the casino, Uncasville, which is in the southeastern corner of Connecticut, is rural, says Uihlein, and most employers in the greater Hartford area are in insurance and financial services.

Many big companies are working on multiple projects simultaneously, which is fueling a "critical need" for project managers, says Andy Baker, senior recruiting manager at Allstate Insurance Corp. in Northbrook, Ill. In addition to finding the right people in an ever-tightening labor market, Allstate is also wrestling with determining whether the business units in need of project managers have funds they can set aside for possible relocation costs, he adds.

Predictions

HOT SKILLS
The hot skills in 2006? Wireless network design, ITIL compliance management, portfolio management and AJAX programming.
ANDRES CARVALLO, CIO, AUSTIN ENERGY, AUSTIN

IT/BUSINESS INTERSECTION
The hot skills will be business process modeling, business process languages, codeless development and model-driven architectures. Functions that sit between IT and the business, at the cusp of the two – that's where the magic sauce for IT success is and where the biggest differentiation opportunity lies. Creating Web services that provide business value and intelligence, not just ones that are technically feasible – that is a key skill.
WILLIAM A. MOUGAYAR, VICE PRESIDENT AND SERVICE DIRECTOR, TECHNOLOGY RESEARCH PRACTICE, ABERDEEN GROUP INC., BOSTON

SECURITY
The hottest IT skills in 2006 will be in information security, because the security-breach notification laws in 20 states have suddenly magnified corporate liability for security breaches. I see demand already peaking in our local market for two roles: the security leader who can write policy, create processes, communicate to clients and executives, and manage projects; and the security guru, who's agile at implementing security solutions across the variety of technologies you'll find in a typical large company.
JAY CLINE, DATA PRIVACY OFFICER, CARLSON COS., MINNEAPOLIS, AND *COMPUTERWORLD.COM* PRIVACY COLUMNIST

INNOVATION
CIOs in 2005 turned their attention from regulatory compliance to once again focusing on innovation and creating new products and services. This translated into more demand – in fact, pent-up demand – for application development skills relative to infrastructure skills, for example. This trend will continue in 2006, in part due to companies insourcing more applications development after wising up to the risks and difficulties associated with offshoring development initiatives.
DAVID FOOTE, PRINCIPAL, FOOTE PARTNERS LLC, NEW CANAAN, CONN.

Expected Changes in 2006

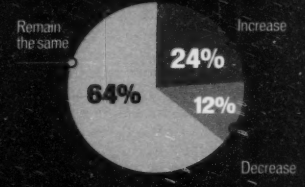
TOP FIVE PURCHASES

Percentage of respondents who will buy:

1. Servers	81%
2. Desktops	78%
3. Laptops	75%
4. Networking equipment	64%
5. Wireless/mobile devices	57%

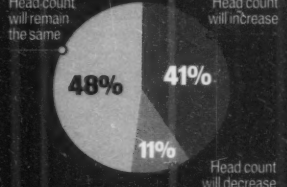
OUTSOURCING

Will the percentage of your IT budget allocated to outsourcing change?



IT HEAD COUNT

Percentage of respondents who said:



REASONS FOR HIRING

Why will you increase staff in 2006?

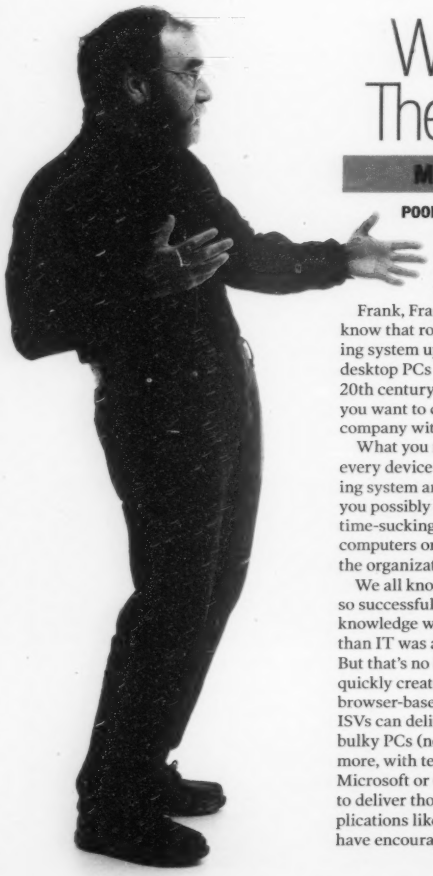
New systems, projects	72%
Corporate growth	59%
Security initiatives	28%
Regulatory compliance demands	18%

BASE: Respondents who said they would be hiring in 2006. Multiple responses allowed.

BASE: 338 IT executives; **SOURCE:** Exclusive *Computerworld* survey, August 2005

SOUND-OFF: Thin Clients

Our columnists lock horns on the future of PCs.



Wave of The Future

MARK HALL

POOR MISGUIDED FRANK. Still dedicated to a dusty strategy to upgrade to Longhorn — oops, Vista.

Frank, Frank, Frank, you should know that rolling out fat operating system upgrades on expensive desktop PCs was cutting edge in the 20th century, but it's not a process you want to continue to shackle your company with in this century.

What you really want to do is find every device running a PC operating system and eliminate all the ones you possibly can. It's time to end IT's time-sucking support of full-scale computers on desktops throughout the organization.

We all know why PCs became so successful. They did things for knowledge workers faster and easier than IT was able to deliver them. But that's no longer the case. IT can quickly create easy-to-use, intuitive, browser-based applications as fast as ISVs can deliver new applications for bulky PCs (no — way faster). What's more, with terminal services from Microsoft or Citrix, you can continue to deliver those chubby desktop applications like Microsoft Office that have encouraged end users to cling to

Continued on page 32

PHOTOGRAPHY BY ROBBIE MCCLARAN

Dead in The Water

FRANK HAYES

WELL, THAT SURE SOUNDS appealing, doesn't it? Let's get rid of PCs, and things will be much better for IT. And it's true: Thin clients *are* easier to manage, secure and control. PCs just aren't what IT departments need.

So it should be pretty easy to persuade users to give up their PCs for thin clients, right?

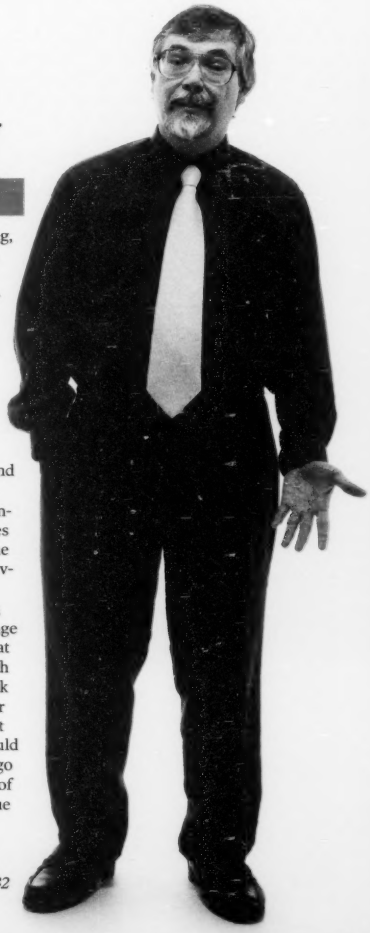
Fat chance, Mark.

Users know what thin clients are. They're glorified terminals. And what's wrong with them isn't that they're simpler or slower or less fancy than PCs. It's not that thin lizzies won't run XP or Vista or Linux. The problem is that, with thin clients, everything depends on IT.

So what will happen when, say, a user brings in a $39 software package from CompUSA just after lunch that she wants installed so she can finish her sales presentation for a 4 o'clock customer meeting? On a PC, she (or the local power user) could install it in minutes. With thin clients, it would take days of testing before it could go live. That's once it gets to the front of the queue. If IT even agrees to queue it for installation at all.

Users know that. They know IT will say no first and ask questions

Continued on page 32



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–Eric Singleton, CIO TOMMY HILFIGER

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MARK HALL

Continued from page 30

their desktop machines.

So, yes, I'm suggesting that you replace as many of your desktop machines as possible with thin clients. Many of you are already ahead of me on this. IDC analyst Bob O'Donnell told me that he doubled his forecast of thin-client sales for 2005, so that he now expects the growth rate for the inexpensive devices to be 46% over 2004. And that's before taking into account legislation in Japan that makes it illegal to store customer data on desktop computers, a move that will only accelerate thin-client growth.

The advantages to IT are obvious. Thin clients are much easier to manage. Sending techs out to troubleshoot someone's desktop machine will become a thing of the past.

He also remarked that replacing PCs with thin clients is a strategy that "is just starting to resonate" with IT managers. That means today's 46% growth is only going to get bigger in the years ahead. Believe me, you won't be alone in tossing out PCs and substituting them with thin clients.

Today's thin clients aren't the dull devices of old. They're snazzy machines that range from low-end units that cost less than $200 to cool state-of-the-art systems that can run video applications as fast as anything from Dell. And in the near future, we'll be seeing mobile thin clients and specialized hardened thin clients for hazardous working areas, among other new designs.

The advantages to IT are obvious. Thin clients are much easier to manage. Sending techs out to troubleshoot someone's desktop machine will become a thing of the past. And all those tools you use to monitor and support PCs — well, you'll be saving a bundle when you don't have to update them.

The biggest blessing from dumping most of your desktops will come from immediately improving your company's security. No more viruses or worms spreading from end users stupidly clicking on infected e-mails. No more running around with your hair on fire when your network is hosed by a zero-day virus. No more having to regularly update the security on every single machine with service packs, antivirus software and antispyware programs. If you can keep your server secure, you can keep your company's data safe.

BEYOND THIN

Of course, Frank, not every PC can be replaced. I'll grant you that. Not yet. But I'm betting most can be swapped out for thin clients without any significant problems. Certainly fewer and smaller problems than you'll have upgrading to Longhorn — oops again! I mean Vista.

Mobile laptop users will have the strongest argument in support of a Longh . . . uh, Vista refresh. But I'm wagering many of your road warriors don't really need laptops while traveling — except for playing Solitaire while waiting for their planes to board. Windows CE or Palm devices will probably give most working travelers what they need, such as access to e-mail, the Web and applications. Giving most end users laptops is overkill. Worse, it's dangerous overkill when they get back to the office and start spreading that nifty new worm they picked up on the road.

While I don't believe that PC operating systems will die out completely, I do believe they have outlived their usefulness to IT. And now is the time to begin the shift away from them inside corporations.

FRANK HAYES

Continued from page 30

later. To them, we're not the IT department. We're the "No" department.

We don't mean to be obstructionist. We're just trying to reduce the cost of managing technology by reducing the IT-related problems users have. And the easiest way to reduce users' IT problems is by cutting the choices users have and limiting what they can do.

So IT says no. That's why users don't talk to IT. And that's why they like their PCs, which let them pick their own software and install their own gadgets. With PCs, users don't have to ask IT's permission to use something they think will help them do their jobs better. That something may not be safe or stable or manageable. But if they don't ask, we can't say no.

For users, thin clients are the ultimate IT 'no.' And if we try to force thin clients on users . . . we'll have all-out war on our hands. That's a war we'll lose.

Remember, bringing in PCs to replace terminals was never IT's idea. Users forced desktop computers on us, starting more than 25 years ago when they smuggled in Apple IIs running something called a spreadsheet. Users have been forcing innovation on us ever since. IT has been fighting it all the way.

For users, thin clients are the ultimate IT "no." And if we try to force thin clients on users — sneaking in at midnight to steal their flexible, innovation-oriented PCs and replace them with glorified terminals — we'll have an all-out war on our hands. That's a war we'll lose. Users make money for the company. We don't.

So we have a choice. We can try to sell users on the idea of voluntarily swapping their PCs for thin clients, and good luck to anyone who wants to try.

Or we can forget about thin clients, recognize that, after a quarter of a century, we've lost the fight against desktop computers, and focus on a battle we *can* win: the battle against "no."

After all, what were we hoping to gain with thin clients? There would be just as many passwords to reset, broken keyboards and flaky mice to fix, and lost files to restore from tape. Mainly, we were hoping to keep users from doing things that threaten the security, stability and manageability of their own systems and everyone else's.

But we don't need absolute control over users for that. We just need to reduce the surprises.

To do that, we need users to talk to us before they make changes.

And to get them to do *that*, we have to stop saying no.

That doesn't mean we should always say yes. It means we take a position that, when users bring something in, we want to know about it, so that we can make sure it's safe, legal and effective as soon as possible. And until we've OK'd it, they're on their own for support and they're liable for any problems caused.

Sure, if it brings down the network, we're the ones who will catch hell. But that'll just give us motivation to check out that user-installed software in minutes or hours, not days or weeks.

Convincing users that IT isn't the No department won't mean every user will call the help desk before opening a virus-laden e-mail or downloading a worm-infested program. It'll help, but it's no panacea.

But then, Mark, neither are those brain-dead thin clients. And unlike thin clients, shaking that no-it-all reputation is something IT can actually hope to make a reality.

Predictions

IT BUDGETS
Budget realities will continue to be a way of life in IT, yet businesses will expect IT to transform to meet the ever-changing business environment. The bar for IT performance will continue to be set higher. Companies will need to drive down operational spending to increase the money to invest in IT transformation.
FRANK MODRUSON, CIO, ACCENTURE LTD., CHICAGO

CIO REBELLION
CIOs will rebel against their CFOs and CEOs. IT budgets have been squeezed in the past five years to the point of choking innovation and the enablement of new revenue empowered by IT capabilities. At 2% of revenue, the IT budget provides the best 2% investment that any CEO can buy. There isn't any other function in the organization where 2% of revenue goes so far in providing value.
WILLIAM A. MOUGAYAR, VICE PRESIDENT AND SERVICE DIRECTOR, TECHNOLOGY RESEARCH PRACTICE, ABERDEEN GROUP INC., BOSTON

INSOURCING
A good deal of recently offshored work will be brought back onshore. Responding to complaints about poor customer service from outsourced, offshore help desks, JPMorgan Chase, Prudential, Dell, Cable & Wireless and others have already brought their help desks back in-house. Others will bring a variety of customer-facing functions back. The customer experience is a "moment of truth." A good one deepens the relationship, while a bad one has the opposite effect. Major companies will respond to customer complaints about voice mail, rigid rules, difficult-to-understand people, etc., by bringing customer contact back in-house.
BART PERKINS, MANAGING PARTNER, LEVERAGE PARTNERS INC. AND A *COMPUTERWORLD* COLUMNIST

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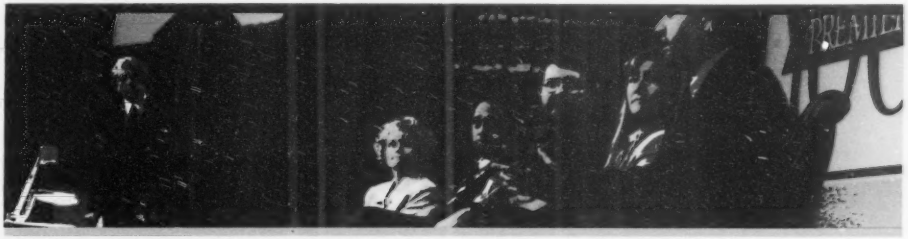

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Hope & Hesitation

A boon for some but a disappointment for others, these three technologies are still viewed with a skeptical eye by IT.

CHRISTOPHER NIELSEN

1. RFID

COST AND COMPLEXITY continue to block enterprise use. BY JOHN S. WEBSTER

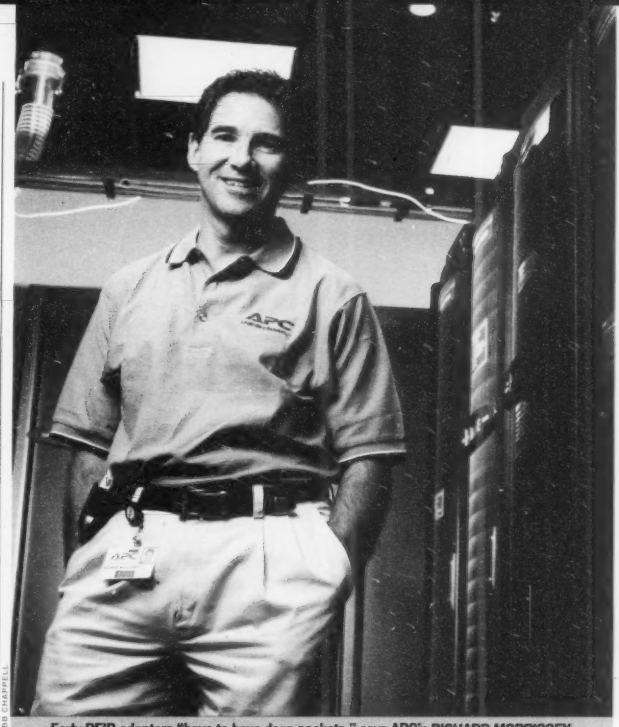
THE IT TRADE PRESS and industry analysts alike have been hailing radio frequency identification as the second coming of bar codes. But for users, most of whom have implemented only small, low-impact pilots, RFID is a long way from becoming a key part of the enterprise. In fact, respondents to a recent *Computerworld* survey ranked RFID second among technologies that hold promise for their companies or industries — but first among technologies that haven't lived up to their hype (see charts, pages 35 and 36).

Indeed, many organizations that have deployed RFID have done so because it was mandated by powerful business partners like Wal-Mart Stores Inc. or the U.S. Department of Defense, which can control how their suppliers do business. Other early adopters are testing the technology in their own supply chains or assembly lines, or in systems for tracking IT assets. They're the exception, however, since high-cost, complex deployment and entrenched tracking systems — most notably bar codes — are keeping RFID on the back burner at many organizations.

One early adopter, American Power Conversion Corp., a West Kingston, R.I.-based manufacturer of uninterruptible power supplies and other physical network infrastructure products, is ahead of the RFID curve. But even at APC, the technology remains in the pilot stage. The $1.7 billion company is about to launch a small-scale RFID rollout that includes middleware from IBM and production design and deployment services from Dulles, Va.-based Odin Technologies.

Despite being close to completing its second ROI study to determine the financial benefits of a full-scale RFID deployment, including integration with its Oracle ERP suite, IT officials at APC say they don't expect widespread deployment at their own company or other organizations this year.

"2006 will still be a learning year. We'll be asking, 'Are we getting financial benefits, and is this a complete solution?' " says Richard Morrissey, director of e-business strategy development at APC. "The cost of entry has come down, so for our suppliers, it's not as cost-prohibitive. But to scale globally will be a significant cost. Even though the prices are dropping and standards are being settled on, early adopters have to have deep pockets."



WEBB CHAPPELL

Early RFID adopters "have to have deep pockets," says APC's RICHARD MORRISSEY.

COST ISSUES

RFID isn't new — if your car is equipped with a transponder for paying highway tolls, chances are you're already using it. But it's just now beginning to affect corporate IT. RFID holds the promise of automatic identification and data collection without the line-of-sight and proximity limitations of bar codes. However, despite the hype, widespread adoption has been slow.

"It's still in the early-adopter phase, and cost is the main problem," says Curtis Price, an analyst at IDC in Framingham, Mass. "Among the companies we've spoken to — and this is anecdotal — they can expect to pay from $500,000 to $1 million. That's before any kind of expansion, not for a full-scale rollout."

Even where RFID would appear to be a good fit, high deployment costs are holding companies back. At Marquette University in Milwaukee, IT managers see the technology's potential. For example, RFID could be used to track dental instrument kits in the university's dental school — something that is currently done with bar codes — and it could replace magnetic-stripe technology in student ID badges. But a bare-bones budget has prevented anything more than a cursory look at deployment.

"We see benefits, but they don't outweigh cost," says Dan Smith, senior director of IT services at Marquette. "Our budgets aren't up to implementing it, even in areas where it would make sense."

For example, Smith says that mag-stripe IDs cost about 40 cents per card. He estimates that RFID-based IDs would cost between $5 and $7 per card. That could equal almost $100,000 campuswide, without taking into account the cost for new RFID card readers. (The university doesn't have an estimated cost for replacing bar codes with RFID in the dental school.)

Even at the largest companies, management balks at the cost of RFID. At Bank of Tokyo-Mitsubishi Ltd., a unit of financial services giant Mitsubishi Tokyo Financial Group, bank managers say RFID could be used to keep track of transaction data stored on tapes that get transferred off-site to third-party data-storage companies. But it hasn't considered bringing in an RFID tracking system, says Marty Ross-Trevor, the bank's New York-based vice president manager.

"A major stumbling block is the cost of the tags alone," says Ross-Trevor. "A bar code costs a fraction of a penny, and tags can cost a few dollars each, and you need thousands of them, as well as the servers and everything else. It's a multimillion-dollar investment. That works for Wal-Mart, but for smaller companies, it's hard to justify the cost. It's still too early to even do ROI."

HYPED UP

The top five technologies that, according to respondents, didn't live up to their promise in 2005:

1. RFID
2. Wireless
3. Voice over IP
4. Handhelds and other new cellular devices
5. Web services

BASE: 3,881 executives

SOURCE: EXCLUSIVE COMPUTERWORLD SURVEY, AUGUST 2005

UNANSWERED QUESTIONS

RFID deployment is not only costly, it's also complex. There's a lot more to the technology than tags and readers. A complete RFID system with servers, middleware and integration software for legacy business systems, as well as new applications that will be based on the data, can have a profound impact on not only your own IT infrastructure, but also those of your business partners.

"[With RFID], you're taking a lot of data that gets collected at the edge of the network, and that might be the most challenging part," says IDC's Price. "Users are asking, 'How do I put business logic around it? Are reports available to check on the health of the RFID system? Can I bring it in seamlessly and integrate it with existing systems?' "

It's a major task just to figure out what to do with RFID data. The technology is at a point where the few early adopters have barely included back-end integration into their pilot rollouts, observes Christine Spivey Overby, an analyst at Forrester Research Inc. in Cambridge, Mass.

"The pilot companies are just figuring out that deployment is very complex, stretched across a variety of stores [and] large geographical areas, and it's hard to do. Then, what do you do with the data? There's not a lot of information with it," says Overby. "In the short term, with pilots, there's not as much investment in back-end technology. Many don't have robust integration to the back end."

At APC, these considerations, as well as the company's geographically far-flung distribution centers, have made RFID deployment difficult, says Morrissey. "[The technology] will require us to change some network architecture, as well as that of our partners, and it affects where we place servers," he says. "We don't want to do tagging across a wide-area network halfway around the world. So there's clearly a local impact, but also a corporate and global impact if you're that size company. This affects end users, retailers and distributors."

However, he adds, even APC customers that don't have RFID capabilities can benefit from the company's use of the technology because the business processes will be improved upstream.

"We're adding value — not only the perceived benefits, but also the processes that improve business," he says.

What will it take to allow RFID to finally live up to the hype? Retailers will continue to strong-arm suppliers into using RFID, but so will developing standards such as passive UHF Generation 2, which is used by Wal-Mart, Target Corp. and the Defense Department, says Forrester's Overby.

Because of the high cost of deployment and the impact on existing IT infrastructures, force might be necessary to prod users to adopt RFID. "For us to implement it, it would have to be determined by regulators and become like a Sarbanes-Oxley bill," says Ross-Trevor at Bank of Tokyo-Mitsubishi.

Despite the obstacles, RFID is bound to usher bar codes and other edge-network tracking technologies out of the enterprise. In the meantime, users will have to watch how RFID's early adopters, as well as those companies forced to use it by large, influential players, can improve their bottom lines with the technology.

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2. Wireless

MANAGEABILITY PROBLEMS continue to stymie widespread adoption. BY JOHN S. WEBSTER

FOR EVERY CIO who's pushing through a wireless project in 2006, there's one holding back.

If it seems that the hype surrounding wireless was all too familiar last year, that's because it's a perennial front-runner on every CIO's to-do list for the coming year. To wit: In a January 2005 Gartner Inc. survey, 1,300 CIOs labeled wireless-related technologies — including overall enterprise security and wireless workforce enablement — first and third on their priority lists for that year. *Computerworld*'s own survey ranked wireless implementations third among projects planned for 2006.

Yet at the same time, many IT executives are hesitant. In the same *Computerworld* survey, wireless ranked second among technologies that delivered more hype than results last year. And while the term *wireless* covers a lot of technology, users cite the usual suspects — security, manageability and standards — and, more recently, perceived shortcomings of Wi-Fi as their primary concerns.

"Wireless is a space where standards are continuing to evolve," says John Connors, director of global business systems at PolyOne Corp., a manufacturer of thermoplastic and other polymer materials in Avon Lake, Ohio. "Seeking a perfect security solution is a good governance step, but the speed at which hackers defeat each one makes it a never-ending journey. At some point, you have to just pick a [wireless] technology."

A June 2005 survey by Forrester Research Inc. in Cambridge, Mass., revealed that the security and manageability of wireless technologies continue to be the top concerns of IT managers, even ahead of cost. Thirty-five percent of respondents to the survey listed security as the foremost obstacle to wireless technology adoption, even while 25% of them, mainly large enterprises, were piloting or considering wireless LAN deployments.

"Although there are a lot of reasons [wireless has been slow to take off], security is still the biggest inhibitor," says Ellen Daley, an analyst at Forrester. "But we're seeing larger enterprises that are more security-conscious beginning to adopt [wireless] faster."

Daley says wireless management software from vendors such as Sybase Inc. and Intellisync Corp. and endpoint security systems from companies like Altiris Inc. will help drive wireless deeper into the enterprise.

Meanwhile, IT managers continue to struggle with other aspects of wireless security. At PolyOne, Connors says consumer comfort with cellular phones and PDAs, and the ease with which the devices can be bought and used, can compound an already prickly security and management problem. Preventing nonsecure devices from accessing the network through the firewall has been a concern at the company. The very convenience and consumer-friendliness of wireless technology increases the risk of a security breach.

"One of the biggest challenges in wireless results from that fact that all the technology can be bought in a convenience store. It's easier than ever for consumers to purchase the technology. It's also an easier thing for a consumer to use, maybe too easy, than it is in a large warehouse that's part of the enterprise," says Connors.

ACCESS CONTROLS

Connors' concern isn't unique among IT managers. For a wireless application to be successful, three types of security — access, link and device — have to be in place. The Wi-Fi standard includes specifications for link security to help establish a secure connection between wireless devices and the wireless LAN, but access security through firewalls and device security in cell phones and PDAs require additional software, says Ken Dulaney, a Gartner analyst.

"Access security is a valid argument against wireless. It has yet to be solved, and that gets worse when you have more connections from outside the firewall," he says. "Wi-Fi works very well, but the implementation of security can be a challenge."

Wireless security concerns are not confined to North America. Last April, Gartner asked 1,400 European CIOs to name their top three technology priorities in 2005. Nearly two-thirds said they expected mobile workforce spending to grow faster than overall IT budgets. Dulaney says the results would be similar in other global regions, including Asia.

WHITHER WI-FI?

Looking ahead, even though the WiMax broadband wireless linking standard is beginning to supplant Wi-Fi as the most buzzed-about wireless LAN technology, Wi-Fi continues to vex IT managers. In addition to the same security and management issues that crop up with wireless in general, users are leery of Wi-Fi's constraints on distance and scalability.

"The physical limitations of Wi-Fi are frustrating," says Matthew Ray, manager of Web and application development at Deborah Wood Associates Inc., a marketing services firm in Carmel, Ind. "From a consumer market standpoint, it makes a lot of sense, but from a commercial or corporate standpoint, we haven't seen it get much use here. Also, with the emergence of Gigabit Ethernet, it's increasingly difficult to see the advantages of Wi-Fi."

Elsewhere, the combination of Wi-Fi's limited scalability and reliability and end-user ambivalence toward wireless have impeded its adoption in the enterprise.

At Temple University in Philadelphia, the IT department recently spent $500,000 on wireless LAN infrastructure products from Symbol Technologies Inc., but it hasn't paid off, says Tim O'Rourke, vice president of computer and information services at Temple.

"We're hoping Wi-Fi becomes more reliable and scalable," he says. "I can't say I got a return on investment, but it's not the technology — it's the device on the other end that uses wireless."

O'Rourke says that even though the quality of his vendors has been excellent, access points and reliability have limited Wi-Fi's usefulness at the university. "To use wireless around campus, you first have to have a laptop, and that's where it falls down. Forty percent of our students have laptops, but less than 3% carry them to class. That's because they say they're too heavy, or they're afraid they'll break or get stolen," says O'Rourke.

Will 2006 be the year users can finally move their concerns about wireless down on their list of priorities, if not remove them altogether? Maybe not just yet, says Forrester's Daley.

"It may still take a while. It's not like CIOs are ready to say, 'I feel good about this technology,'" she says.

At the same time, analysts say that because wireless is further embedding itself in the enterprise, management and security will be even greater concerns, and users will need to look to software vendors for help.

The future of Wi-Fi? As IT managers get a better grasp of what Wi-Fi does well and work with vendors to iron out security and reliability, use of wireless LANs will continue to grow.

"Wireless LANs can be extremely secure," says Dulaney. "The 802.11 standard is very solid. If you mix and match components, you might find that you need to team up with your vendors on security, but if you use a reasonable number of vendors, you should be OK."

Wireless has become almost ubiquitous among consumers, and business users and IT managers alike can point out appropriate applications for it. But clearly, hurdles remain before it takes the enterprise by storm. It seems that wireless will continue to hold promise for at least one more year — but that promise will continue to be kept in check by the fact that its benefits won't be reaped easily.

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HOLDS PROMISE

The 10 technologies respondents say hold the most promise in their industry or company:

1. Mobile and wireless, including remote access, handhelds and Wi-Fi
2. RFID
3. Security, including antimalware, fraud detection and authentication
4. Web services, including XML and .Net
5. Networks and network management
6. Data management, including business intelligence and data mining
7. Service-oriented architecture
8. Voice, including telephony and voice over IP
9. Servers, including SQL, dual-core chips, Exchange 2003 and blade servers
10. Customer relationship management, including self-service

BASE: 338 IT executives

SOURCE: EXCLUSIVE COMPUTERWORLD SURVEY, AUGUST 2005

RUSS HANSON

"VoIP benefits are driven by applications, not economics," says CURTIS WOLFE, CIO for the North Dakota state government.

3. VoIP

Quality is conquered, yet SAVINGS ARE STILL ELUSIVE. BY STEVE ALEXANDER

ALTHOUGH NOT as popular a technology as many predicted it would be, voice over IP isn't so much hyped as it is misunderstood.

So says Curtis Wolfe, CIO for the state of North Dakota. He says many IT managers expected that VoIP would save them money across the board. But it doesn't work that way, says Wolfe, whose IT department is running a VoIP pilot project for the North Dakota Department of Transportation in preparation for a much larger state-government rollout over the next four to five years.

"Our assessment is that VoIP benefits are driven by applications, not economics," Wolfe says. "If you can take an application where the integration of data and voice makes sense, such as a call center where an employee can get a screen pop of previous purchases by a customer who's calling, there's value in that. But it's being done for the benefit of sales or customer service, not because you're saving money with VoIP."

In fact, in a recent *Computerworld* survey, respondents ranked voice over IP third among technologies that didn't live up to their promise in 2005.

"Companies are not saving as much as they anticipated," says Keith Nissen, an analyst at research firm In-Stat in Scottsdale, Ariz. One reason is that the volume of phone traffic varies from one company to another. A company that makes a lot of long-distance phone calls among corporate locations can save money with VoIP because those calls can be rerouted over the company's lower-cost IP network, Nissen says. But if facilities make most of their long-distance calls outside the company instead of within it, there's little savings from an internal VoIP network, he says.

To make matters more complicated, it seems likely that the long-distance rationale for buying VoIP — replacing expensive phone calls with cheap ones — won't last long, Nissen says.

"In the future, long-distance charges will come down so much that you will be paying a flat rate for long distance, not a per-minute rate," Nissen says. "So, as a cost justification for VoIP, long distance will go away."

Long-distance rates are expected to decline because of competition from cell phones (which include long-distance in flat-rate monthly prices), low-cost prepaid phone cards and the growing number of VoIP providers that serve both consumers and business-people, Nissen says.

EQUIPMENT BACKLOG

But there's another barrier to VoIP adoption: Current phone equipment is too new to justify replacing it.

"We are going to switch to Gigabit Ethernet on our state network, and as a result, we'll have the equipment and routers we need for voice, video and data over the same network," Wolfe says. "But we won't switch the whole state network to VoIP now because we've got traditional phones and telephone equipment that we're still trying to amortize off the books. That's why it will take us four to five years to move to VoIP."

Some IT managers say the problem of poor service quality — previously cited as a reason for slow VoIP adoption — has disappeared.

"Quality of service is one of the myths of VoIP at this point," says Gregg White, network communications manager for Minnesota's Hennepin County. "It was an issue two years ago, when there were dropped data packets that would cause a gap or echo in the conversation. But we have no quality-of-service issues now, even when we're communicating to 13 remote sites from our downtown Minneapolis cluster of six buildings that are linked by fiber."

By the end of 2005, Hennepin County had converted 5,000 of its 8,100 users to VoIP over a period of two years; the other users will be shifted to VoIP in 2006.

NAGGING CONCERN

But quality of service is still on the minds of some would-be VoIP buyers, Nissen says.

"To ensure quality of service, some enterprises have to re-engineer their data networks to accommodate voice traffic. That is fairly complex and costly," he explains.

Another barrier to VoIP adoption is political wrangling between the voice and data network staffs, White says.

"If the voice and data groups combine their traffic, they can get economies of scale," White says. "But sometimes members of both groups don't want to change the way they do business. That's the reason a lot of companies have not made the jump to VoIP."

Despite these problems, some say 2006 will be the year VoIP becomes widely adopted. "The big advance will come in corporations rather than the government sector," Wolfe predicts.

Others expect that many companies will go slowly with VoIP adoption in 2006. "A lot of large enterprises are not going to pure VoIP networks," Nissen says. "They are still using traditional phones with their IP networks because it costs a tremendous amount of money to replace all the phones at once."

But eventually most companies will opt for pure VoIP networks, because they have either outgrown or fully depreciated their non-VoIP equipment, Nissen says. As a result, VoIP's promise for the enterprise may simply have been delayed, not derailed. ▸

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THE Future of IT

Running IT Operations Like a Business Not So Easy, Execs Say

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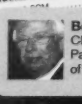
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COMPUTERS

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FRANK HAYES ■ FRANKLY SPEAKING

What to Do: 2006

READY FOR 2006? If you've read the tips, insights and hard looks ahead in this special Forecast issue of *Computerworld*, you already know plenty about what lies ahead in the coming year. Now you need to turn that information into a practical plan — a to-do list for the next 12 months.

Here are a few items to get that list started:

■ **Start treating users as partners.** Forget "users are our customers" — you don't want them bargaining for the best deal, you want them sharing the risk, responsibilities and work involved in IT projects. The more involved they are, the closer you'll come to what they want — and the less grief you'll get.

■ **Practice the art of the elevator pitch.** Spend five minutes each day translating technical justifications for projects into clear, concise business proposals. It's not just for your CEO — this year, you want everyone (IT or not) involved in every project to be on the same page. A short, tight, business-oriented project description helps give you that edge.

■ **Target one non-IT peer and have some face time.** Spring for lunch. (Note to managers: Approve the @#$%! lunch expense, already!) Ask what in IT works well, what needs improvement and if anything really stinks. Mainly, though, put a human face on IT. Yeah, you'll get friends-and-family requests later. But at least you won't just be one of those idiots in the computer room anymore.

■ **Learn one new technology well enough to discuss it.** It doesn't have to be very new; if RFID, 802.11g, NAND flash, Ruby and AJAX are just buzzwords to you, they're candidates. You're in the IT business; in 2006, make sure you stretch your technology muscles regularly.

■ **Identify your real competition.** If you can't name your current top three business competitors, talk to someone in sales. And if you think sales is one of the IT department's real competitors, find another job — your organization is busy eating itself up from within.

■ **Do a gadget census** — not to encourage or prevent any gadget's use, but to find out what's popular among your users. If BlackBerries stop working, you'll want to know in advance how bad the problem will be.

■ **Plug the "pod slurping" hole in PCs.** It lets an iPod user copy files through a USB port, without using the keyboard or a password. You can lock down those ports manually, or with endpoint security software from companies such as SmartLine, Senforce Technologies and Centennial Software. But do it now, while slurping is still only a cute name for a proof of concept.

■ **Find one worthwhile blog and read it every day.** And if there's not enough to hold your interest for five minutes a day, find a better one.

■ **Hold a fire drill.** No, don't surprise your staff or leave the building. Just schedule a stand-up meeting among the cubes to walk through it, so everyone knows what to do in case of a minor catastrophe — and make sure there are triple backups for every critical task during evacuation.

■ **Secure your trash: paper, old hard drives, burned CDs.** And remind users that when they take data home on a CD, they should bring it back for IT to dispose of. Then invest in a heavy-duty shredder to slice up those CDs, and maybe even let users watch the show — with appropriate protection, of course. That'll remind them that you're serious about security.

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

■ **Identify one really crappy piece of software in your IT portfolio.** (Don't think you have any? Raise your standards.) Fix or replace it if you can. If you can't, just keep reminding yourself that it's there. You don't want to add anything that bad to your company's IT portfolio this year.

■ **Write a one-page five-year plan.** Why five years? That forces you to think forward. Why one page? That keeps you focused on the big picture, so you don't waste time on details you can't guess about.

It's a new year. You've got things to do. Get to it. ▸

Doing the Best They Can

Outside sales guy is promoted to manager, so he'll need a docking station for his laptop. Sysadmin pilot fish gives sales guy the manual in advance, so he'll know how to use it; then, during the sales guy's last road trip, fish installs everything. The following Monday, fish has a phone message: "I can't connect the laptop to the docking station. This @#$%! thing doesn't work!" But when fish arrives an hour later, it's fine. "The laptop is connected and I find the user manual sitting on the desk," says fish. "He didn't get it working until he read the user manual, as prescribed."

SHARK TANK

UM, RIGHT
Senior programmer phones support pilot fish to ask if there's any spare hardware to repair a PC at his site. "I have lots of old PCs we can scavenge parts out of," fish says, "so I ask him what model his PC is, and he reads out the model name. However, we have two generations of that model of PC: one with a small 'space saving' case, the other a larger, traditional-size unit. I ask him, Is it a big case or small case? He's silent for a moment, then says, 'Well, it's in capitals.' "

DON'T PANIC!
User calls help desk to report a gold message that says "thank you" in the lower left corner of her screen. "Believing it to be a virus, I advised her to not touch anything and transferred her to our software support team," says pilot fish who got the call. "The tech took over the call and shadowed the user's desktop but didn't see the message. After asking the user about it, she understood. Once the yellow Post-it note that someone had taped on her monitor was removed, she was able to view her desktop normally."

AREN'T THEY ALL?
This university pilot fish is buttonholed by a faculty member whose hard drive is crashing intermittently. "I asked how big his hard drive was," says fish. "The gentleman thought about it for a moment, then placed his hands six inches apart and said, 'About this big.' "

NIGHTMARE
Database admin pilot fish is showing new-hire help desk guy the server room. See this red button under the plastic flip cover? fish says. Do *not* press it. Which new hire proceeds to do – and down goes a custom financial app. Why did you do that? sputters fish. "Oh, just turn the power back on," new guy says, "nothing important is running." Sighs fish, "After a few more incidents, he was gone – as he told everyone – to pursue his dream job as a mainframe guru."

SHARKY'S DREAM? It's for you to send your true tale of IT life to **sharky@computerworld.com**. You'll snag a snazzy Shark shirt if I use it. And check out Sharky's blog, browse the Sharkives and sign up for Shark Tank home delivery at **computerworld.com/sharky.**

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